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FINAL REPORT

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE PROJECT CUSTER AND GARFIELD COUNTIES, MONTANA

MT A/E 88-46-122

OCTOBER 7, 1989

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SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
FINAL REPORT

I. INTRODUCTION

A. Project Objectives

This bid package contained several reclamation sites. The Sunday Creek site was subdivided into four areas, Sunday Creek North, South, East, and West. The reclamation work was undertaken to close mine openings, backfill subsidence and coal fire surface cracking, remove debris, cover or bury coal slack areas and neutralize all slack areas. After completion of earthwork and site preparation, all disturbed areas were revegetated by seeding, fertilizing and mulching. Completion of the reclamation work eliminated all of the safety hazards and returned the land to a condition consistent with the surrounding environment.

In addition to the Sunday Creek sites, Hay Creek 30, and Chalk Butte, three smaller areas of disturbance were addressed. Two of these were in the proximity of the Sunday Creek sites; one was a maintenance project on a previous reclamation site in Wibaux County.

B. Site Description and Location

1. SUNDAY CREEK

The four Sunday Creek areas are located within the Sunday Creek drainage, a first order tributary of the Yellowstone River. Level terraces and benches characterize the project area, with heavily dissected ridges rising abruptly from the valley floor. The average elevation is 2450 feet above sea level. Vegetation consists of a variety of short prairie grasses, sagebrush, and prickly pear cactus. The current land use is cattle grazing.

The abandoned mines are within a few miles of Miles City on both sides of paved Highway 59 running from Miles City to Jordan. The four areas are all within Section 18, Township 8 North, Range 47 East, Custer County, Montana as shown on the Site and Vicinity Maps.

2. HAY CREEK 30

The Hay Creek 30 site is located in an upland area, toward the head of a coulee that forms one of the branches of Wolf Creek, an intermittent tributary of Hay Creek. Shallow, intermittent drainages have cut through underlying sediments to form wide, gently sloping ridges. The coulee bottoms are narrow and steep sided. The topography varies little with the average elevation at 2640 feet. Vegetation consists of short prairie grasses, sagebrush, prickly pear cactus and cedar bushes.

The mine site is approximately 37 miles north of Miles City and 1200 feet west of the Crow Rock gravel road which runs north-south through Section 30. This section is in the northwest corner of Custer County with Prairie County to the north and Garfield County to the west. It is in the NE ¼ of the SW ¼ of Section 30, Township 13 North, Range 45 East, Custer County, Montana as shown on the Site and Vicinity Maps.

B. Site Description and Location (Cont.)

3. CHALK BUTTE

The Chalk Butte site is located 1/2 mile to the west of Hay Creek 30 in Garfield County. It is at the head of a coulee that forms one of the branches of Wolf Creek. The disturbance areas are on a gently sloping ridge above the creek at an average elevation of 2900 feet. The vegetation is the same as the Hay Creek 30 site.

The location lies in the NE ¼ of the SE ¼ of Section 25, Township 13 North, Range 45 East, Garfield County, Montana as shown on the Site and Vicinity Maps.

4. STAIR MAINTENANCE

In addition to the three projects within the bid package, three additional sites were reclaimed as part of this bid package.

The Stair project was reclaimed in 1987 under MT A/E 86-46-129. Due to limited cover over the adit, additional subsidence has occurred. More subsidence is predicted in the future, as well. The one current sink hole which opened up was fixed under the bid package.

The Stair site is located approximately 6.5 miles north of Wibaux in the N 1/2 of the SE ¼ of Section 2, Township 15 North, Range 59 East, Wibaux County, Montana as shown on the Site and Vicinity Maps.

5. COAL SLACK PILE

An eroding coal slack pile was located on the south side of the paved Highway 59 running from Miles City to Jordan. The adit was completely collapsed and no longer visible. However water had eroded the remaining coal slack pile over the adjacent ground. This slack area was located in the NE ¼ of the SE ¼ of the NE ¼ of Section 13, Township 8 North, Range 46 East, Custer County, Montana as shown on the Site and Vicinity Maps.

6. EXTRA MINE

A small coal mine with a slack pile and opening was reported by the landowner of the Sunday Creek sites. This site is located about 2 miles north of the Sunday Creek sites in the NE ¼ of the SW ¼ of the SE ¼ of Section 35, Township 9 North, Range 46 East, Custer County, Montana as shown on the Site and Vicinity Maps.

C. Land Ownership and Access

1. SUNDAY CREEK

The Sunday Creek North, South and West areas are owned by John L. Moore, et al., Jordan Stage, Miles City, Montana 59301 at phone 406/232-5949. His mother and father, John W. and Pearl Moore owned the land as early as 1963. John L. Moore, Patricia Moore, Alfred Dahl, Carol Watts, Debra Irish and Mary Ellen Mehrer received title from the estate on 12/8/1982 (Microfilm roll 19, Pages 685-686). John Moore lives approximately 1 3/4 miles northwest of the sites, just off of the highway on the northeast (right) side of the road. The Sunday Creek East area is owned by Mary Ellen Mehrer, 1109 West Water, Lewistown, Montana 59457 at phone 406/538-9302. She acquired title of Tract A from Pearl Moore on June 26, 1980 (Microfilm roll 7, Page 1108).

The access route is easy to find. You proceed northwest out of Miles City on paved Highway 59 going toward Jordan (North). After crossing the Yellowstone River, you proceed about 2.4 miles. Access roads to the sites are on both sides of the highway (North, East and West sites to the Northeast and the South site to the Southwest). The North site is visible from the highway.

2. HAY CREEK 30

The Hay Creek 30 site is owned by James and Eunice Taylor, Box 191, Miles City, Montana 59301 at phone 406/232-7641. They acquired title to the land on 8/18/1961 (Plat Book 100, Page 594-595). Bud Taylor (James' brother and Bud's son Dallas) are the contact people and the ones with the grazing lease. They live about 3 miles west of the Hay Creek 30 and Chalk Butte project sites. There is no defined access road to Hay Creek 30. When travelling north, you leave the Crow Rock gravel road and turn west (left) just after passing the Chalk Butte hill. You wind around the top of the drainage and go across country until you reach the site.

3. CHALK BUTTE

The Chalk Butte site is also owned by James and Eunice Taylor who acquired this land at the same time as Hay Creek 30. Access to this site is by proceeding north on the Crow Rock road and then turning northwest (left) about 1500 feet south of Chalk Butte hill. You then travel about 4500 feet to the top of the divide and turn north (right) and travel cross-country to the site.

There is no restricted access (i.e., padlocked gates) to any of these three project areas.

C. Land Ownership and Access (Cont.)

4. STAIR

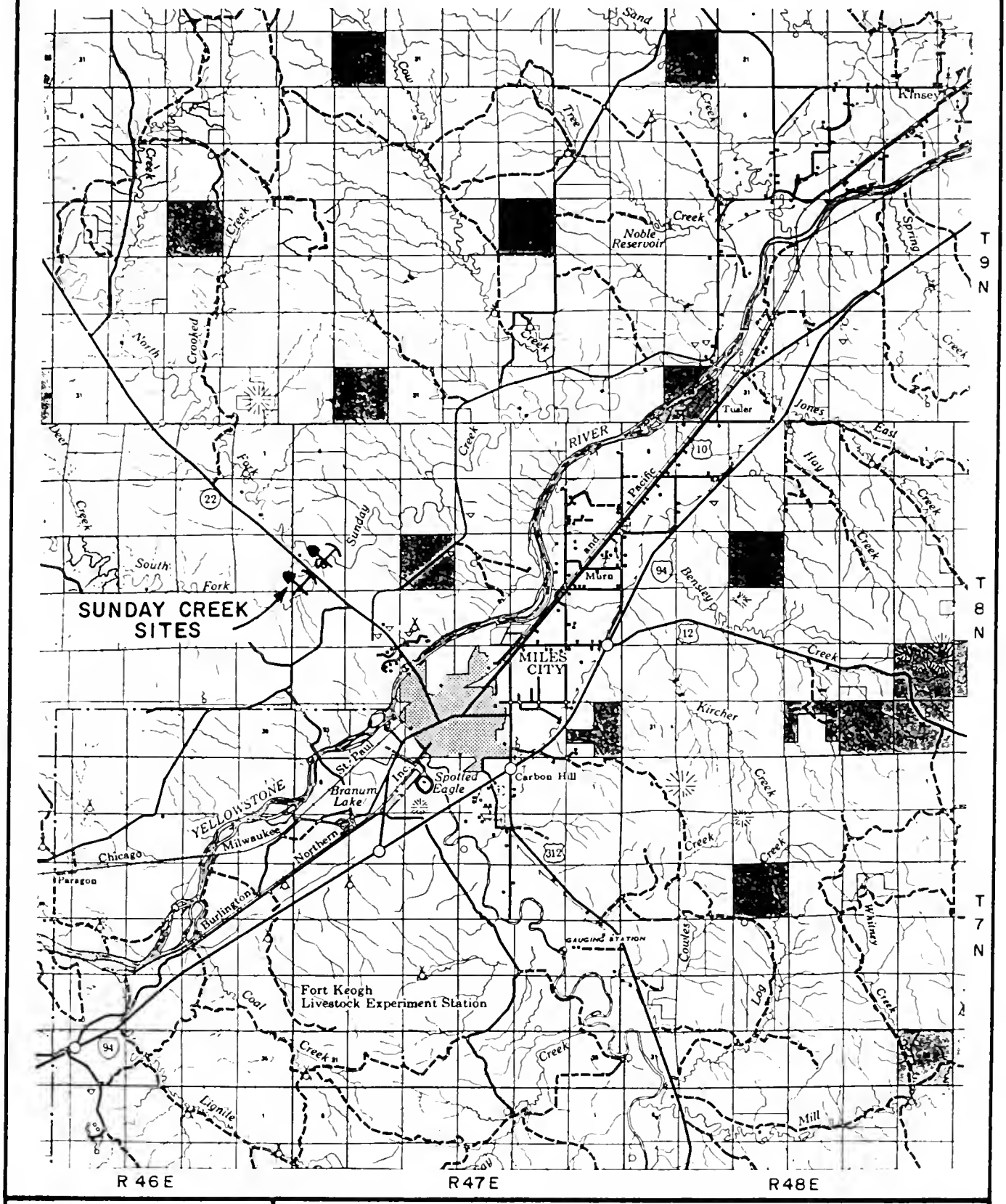
The land and access is presently owned by Stanley and Doris Woods of Wibaux, Montana 59353 at phone 406/795-2383. They acquired title to all of Section 2 on August 28, 1974. They live 1200 feet to the southeast of the mine site, just off the paved road going south into Wibaux.

5. COAL SLACK PILE

John Moore, the owner of the Sunday Creek sites is the lessee of this site. The landowner is Glacier Park Company (subsidiary of Burlington Resources), 519 Main Street, P.O. Box 579, Miles City, Montana 59301 at phone 406/232-1274. The current contact person is James Bishop who is the Director of Lands Managements for Glacier Park Company. Access is directly south of Highway 59 going from Miles City to Jordan.

6. EXTRA MINE

John Moore, the owner of the Sunday Creek sites is also the landowner on this site. Access is through a gate off of Highway 59 (first turn-off to the west of the John Moore residence). You travel north-northwest towards an abandoned farm house and from there travel north to the project site. See the Site Map for assistance in finding the access route to this site.



STATE OF MONTANA — DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU—RECLAMATION DIVISION

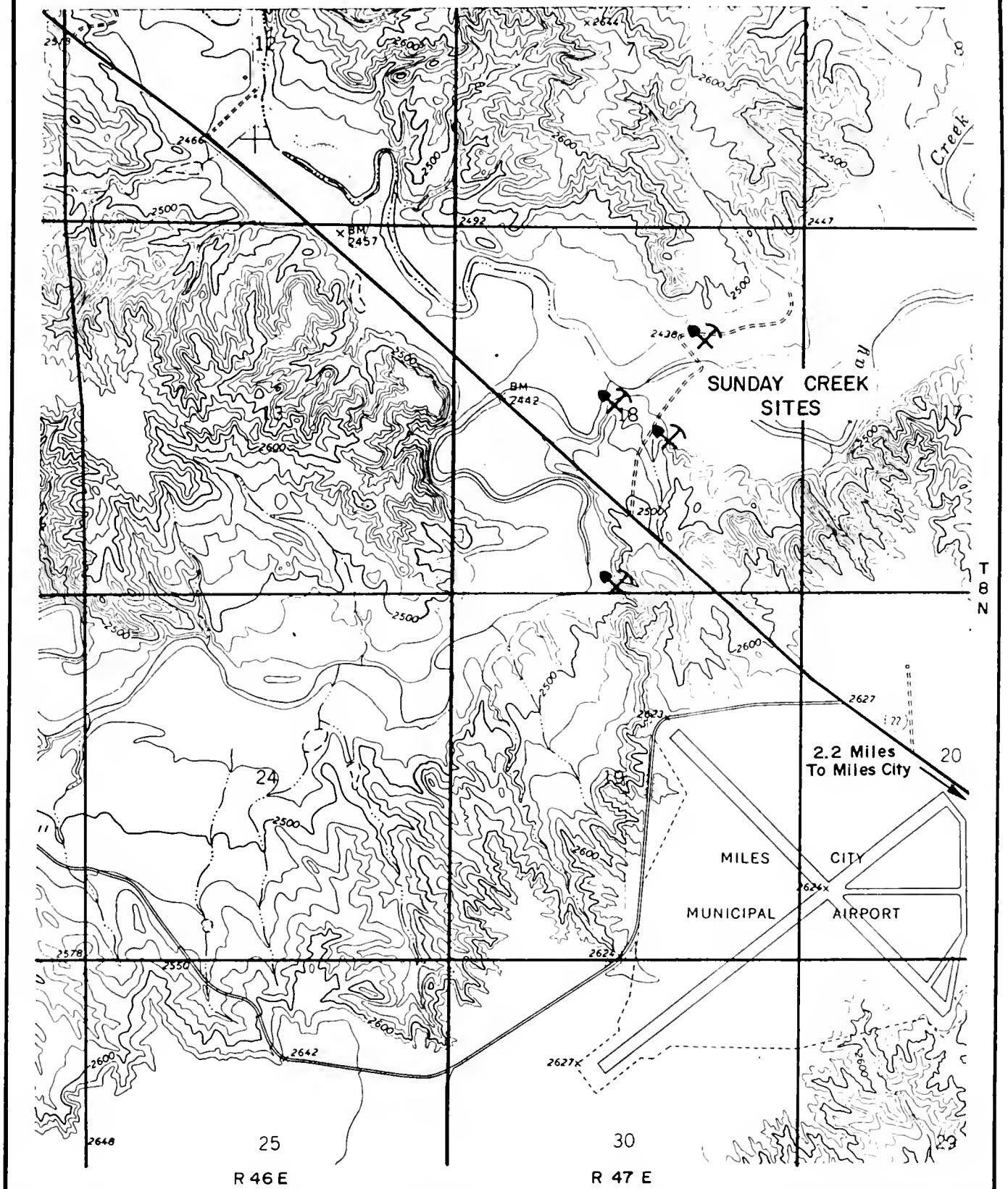
VICINITY MAP

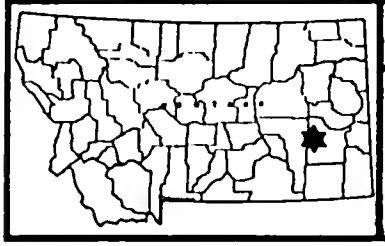
SITE SUNDAY CREEK

CUSTER COUNTY, MT; TOWNSHIP 8N RANGE 47E

SECTION(S) 18

MAP SCALE: 1" = 2.5 Miles





STATE OF MONTANA — DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU—RECLAMATION DIVISION

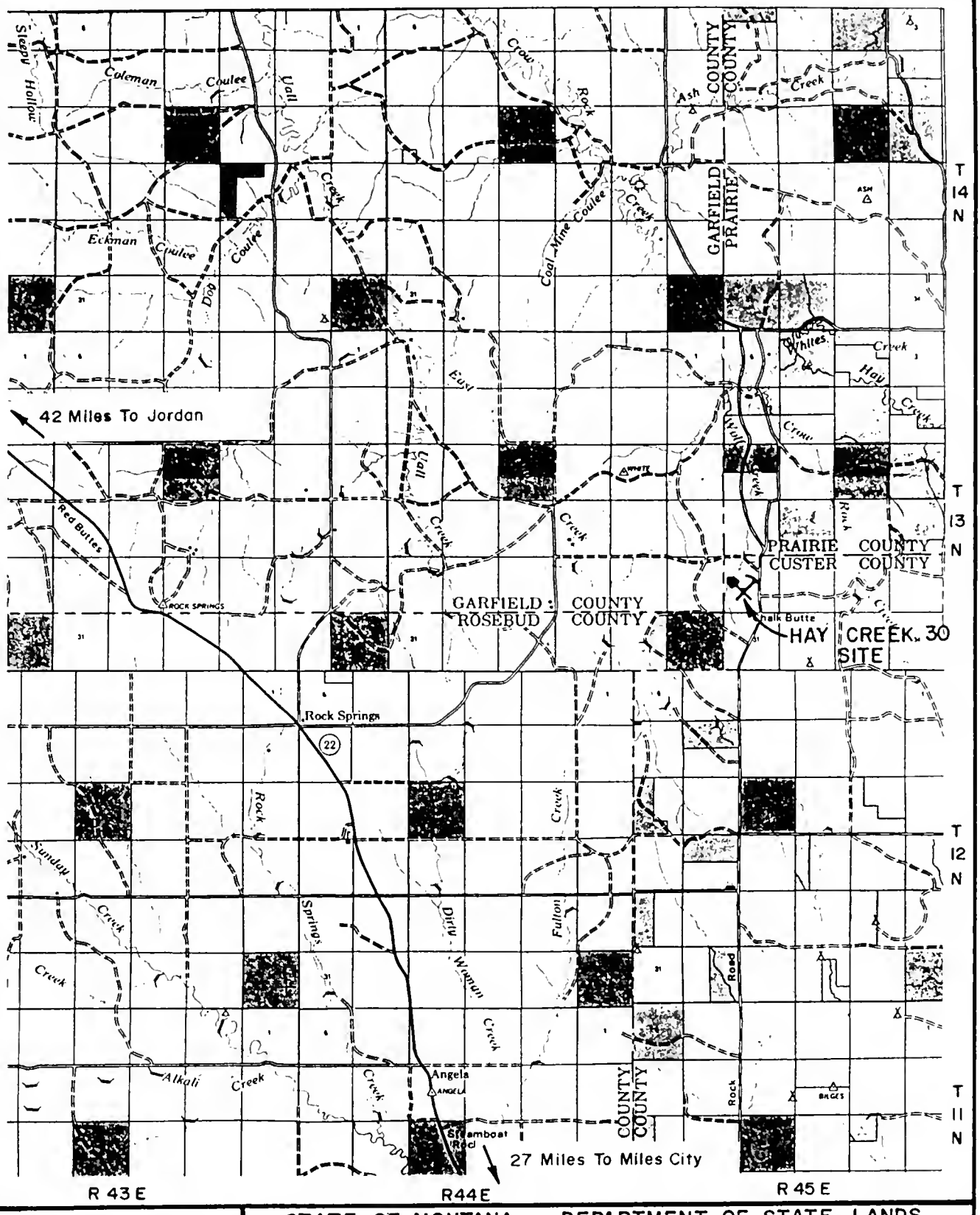
SITE MAP

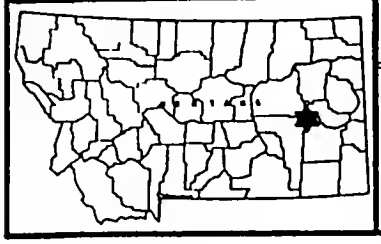
SITE SUNDAY CREEK

CUSTER COUNTY, MT; TOWNSHIP 8 N RANGE 47 E

SECTION(S) 18

MAP SCALE: 1" = 2000' U.S.G.S. QUAD SHEET BIG HILL





STATE OF MONTANA — DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU—RECLAMATION DIVISION

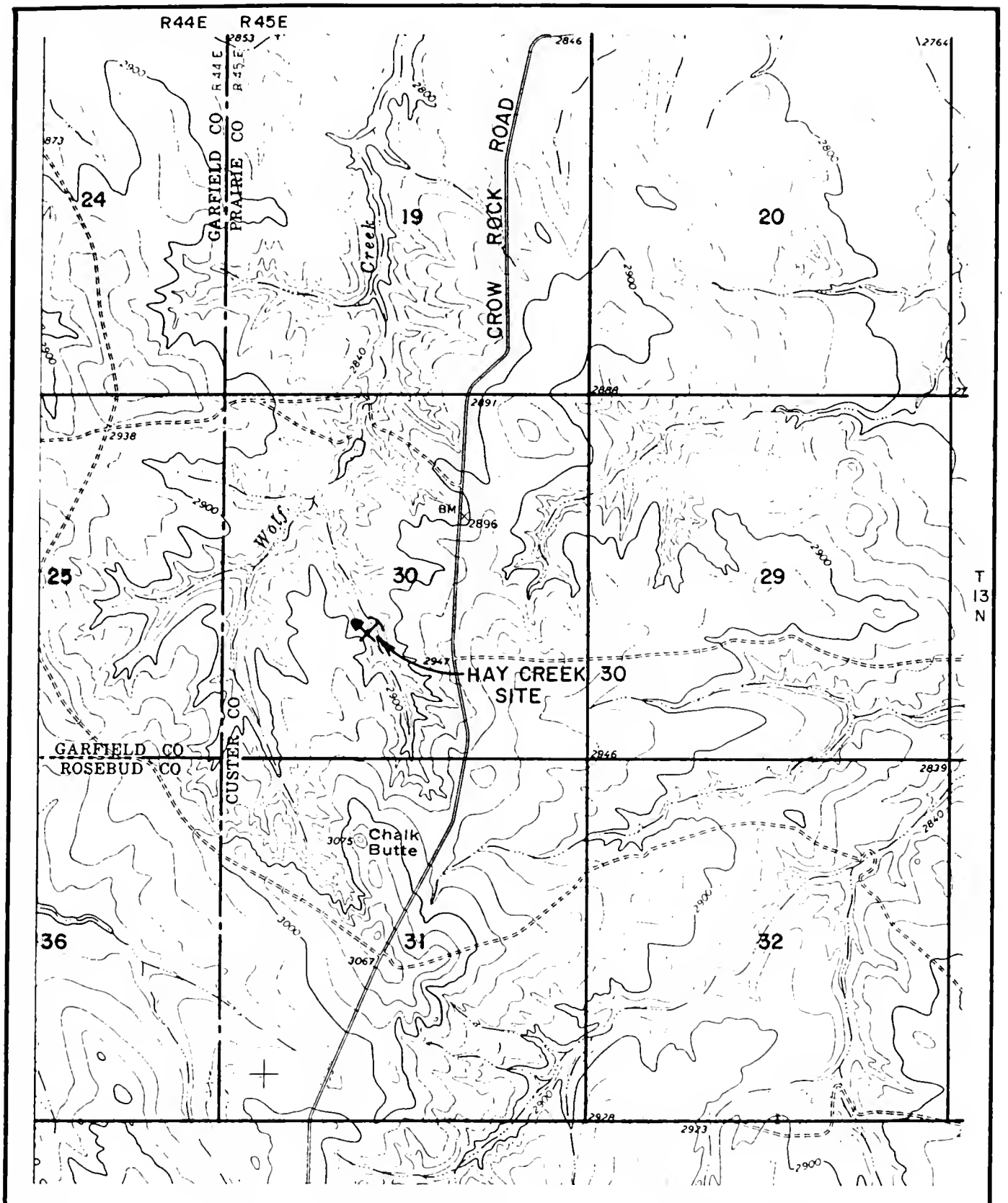
VICINITY MAP

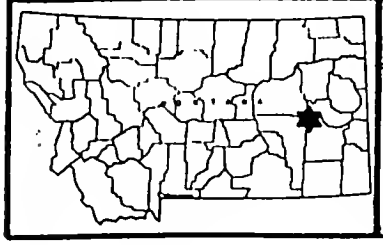
SITE HAY CREEK 30

CUSTER COUNTY, MT; TOWNSHIP 13 N RANGE 45 E

SECTION(S) 30

MAP SCALE: 1" = 2.5 Miles





STATE OF MONTANA — DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU—RECLAMATION DIVISION

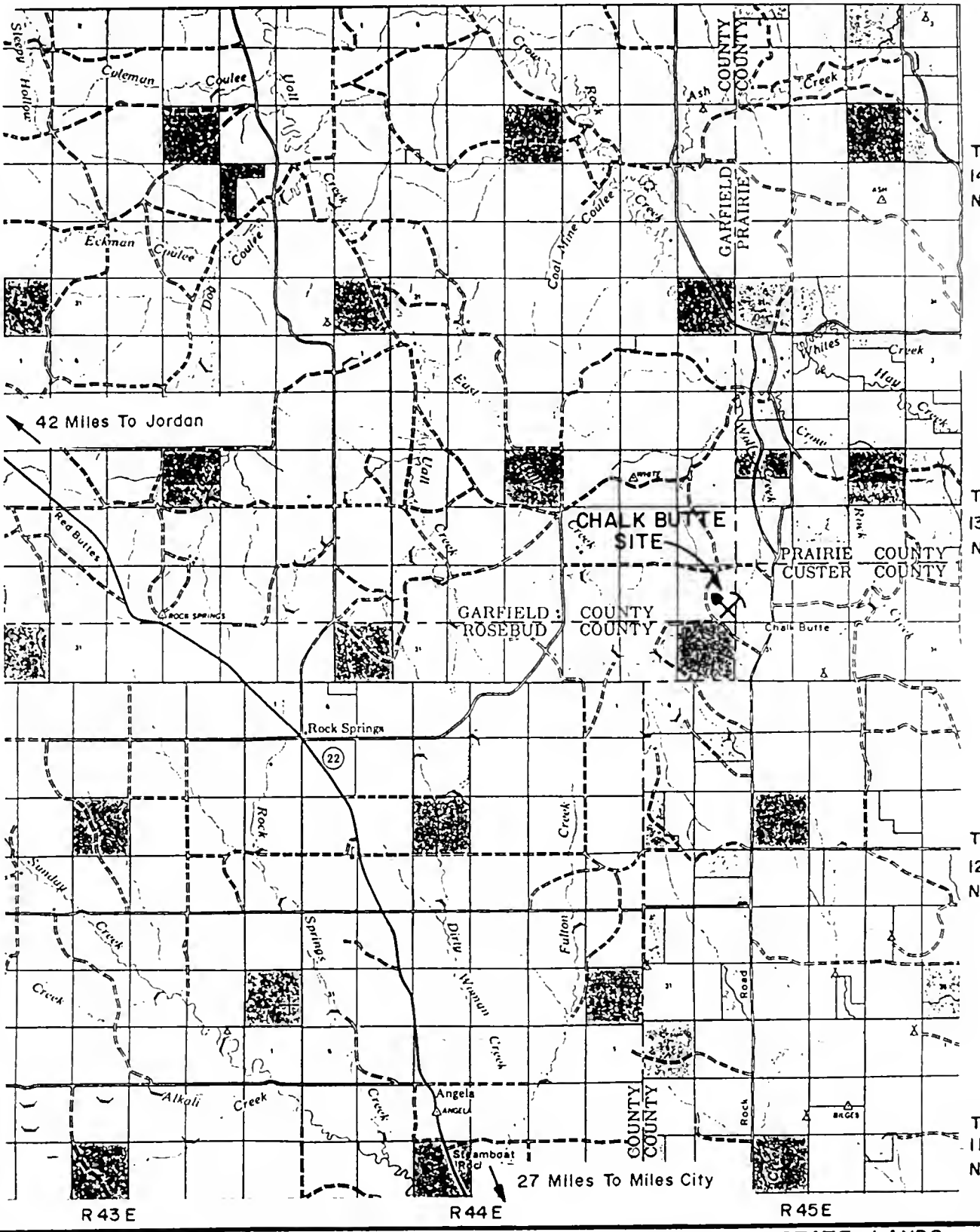
SITE MAP

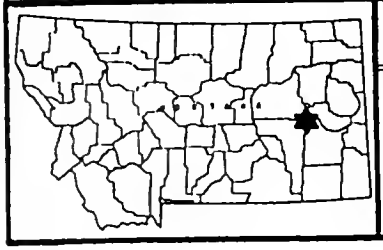
SITE HAY CREEK 30

CUSTER COUNTY, MT; TOWNSHIP 13 N RANGE 45 E

SECTION(S) 30

MAP SCALE: 1" = 2000' U.S.G.S. QUAD SHEET CROW ROCK SE





STATE OF MONTANA — DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU—RECLAMATION DIVISION

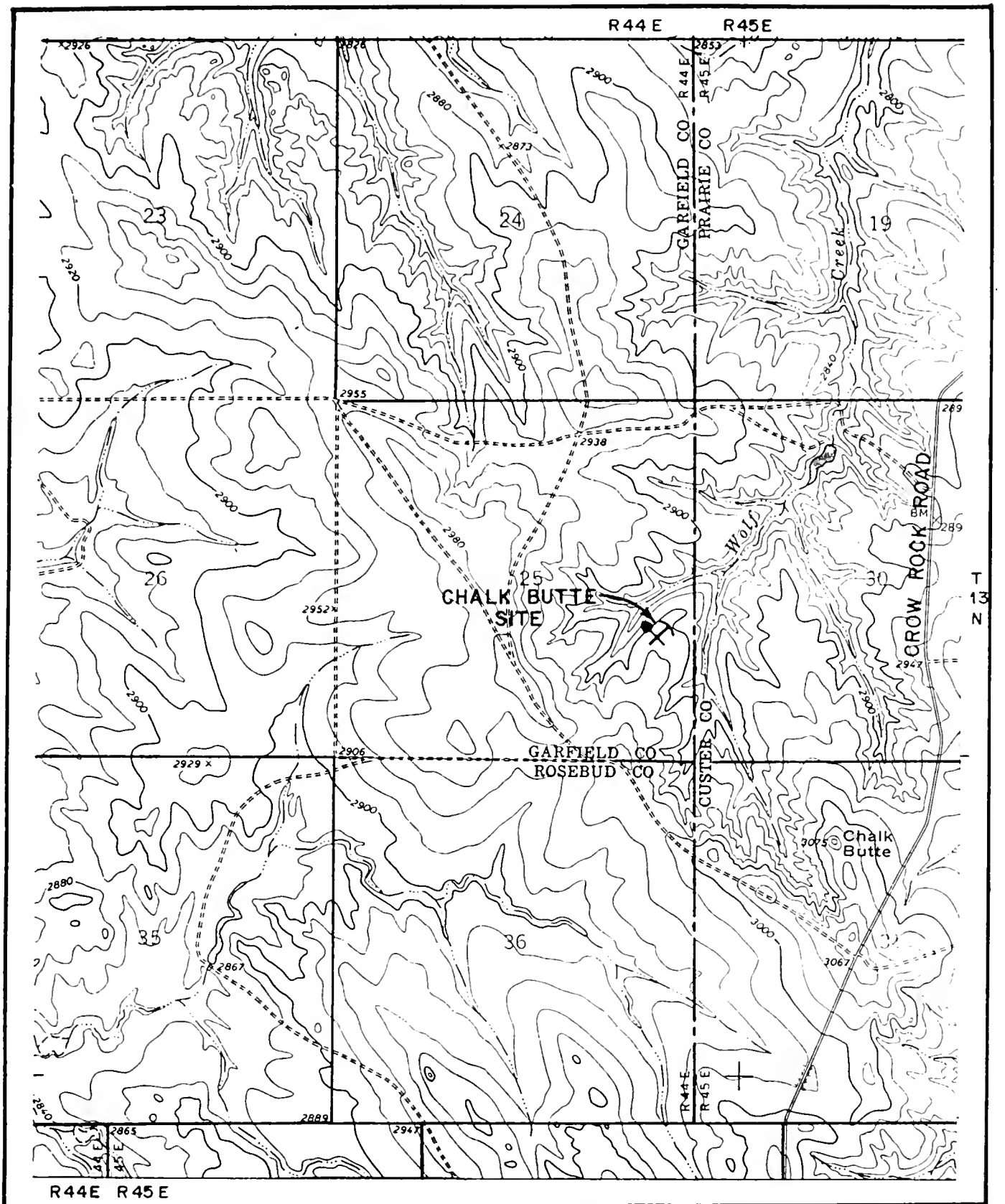
VICINITY MAP

SITE CHALK BUTTE

GARFIELD COUNTY, MT; TOWNSHIP 13 N RANGE 44E

SECTION(S) 25

MAP SCALE: 1" = 2.5 Miles



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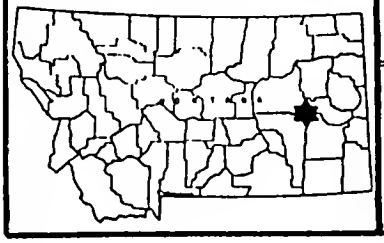


STATE OF MONTANA — DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU—RECLAMATION DIVISION

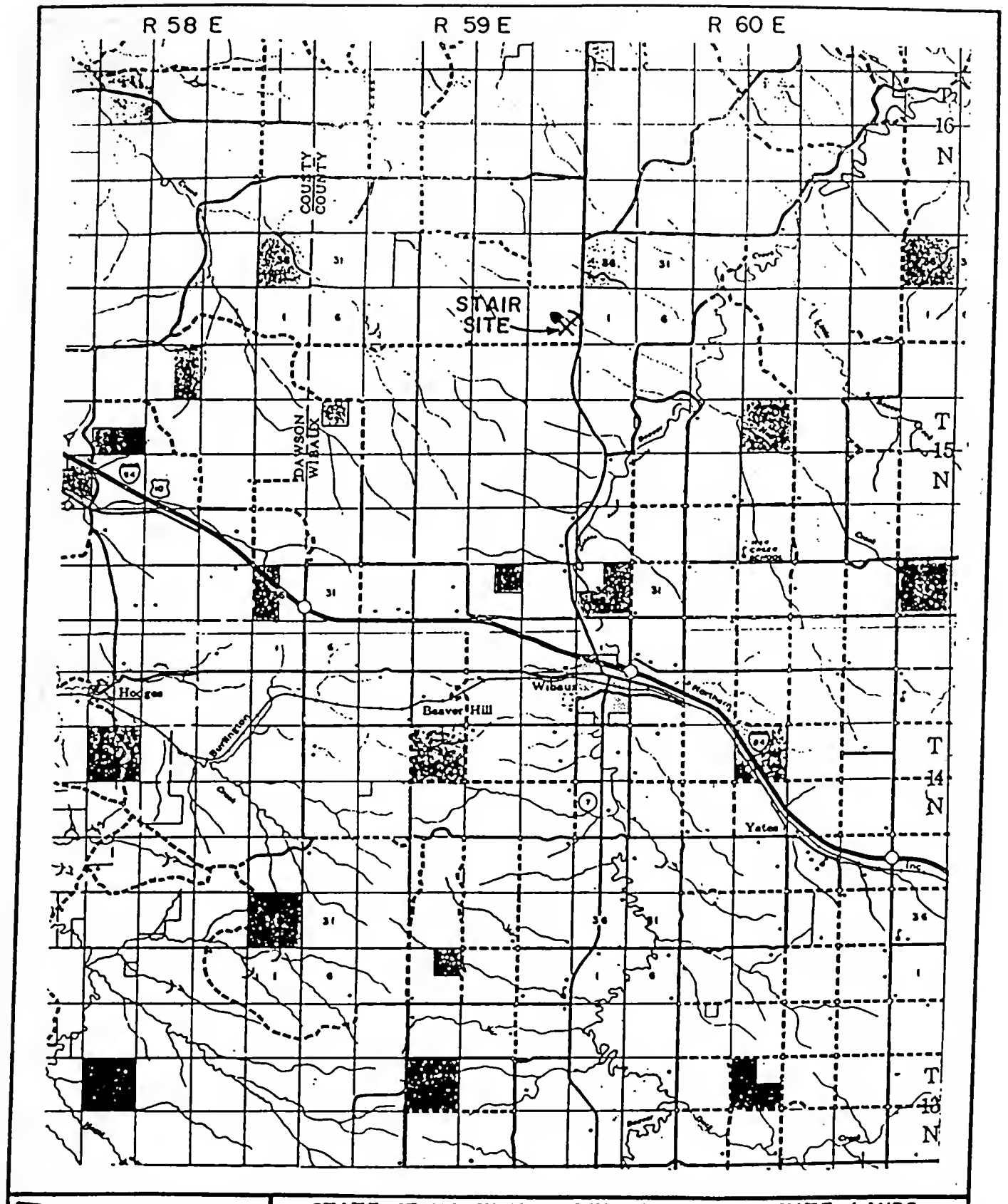
SITE MAP

SITE CHALK BUTTE

GARFIELD COUNTY, MT; TOWNSHIP 13N RANGE 44E

SECTION(S) 25

MAP SCALE: 1" = 2000' U.S.G.S. QUAD SHEET CROW ROCK SE



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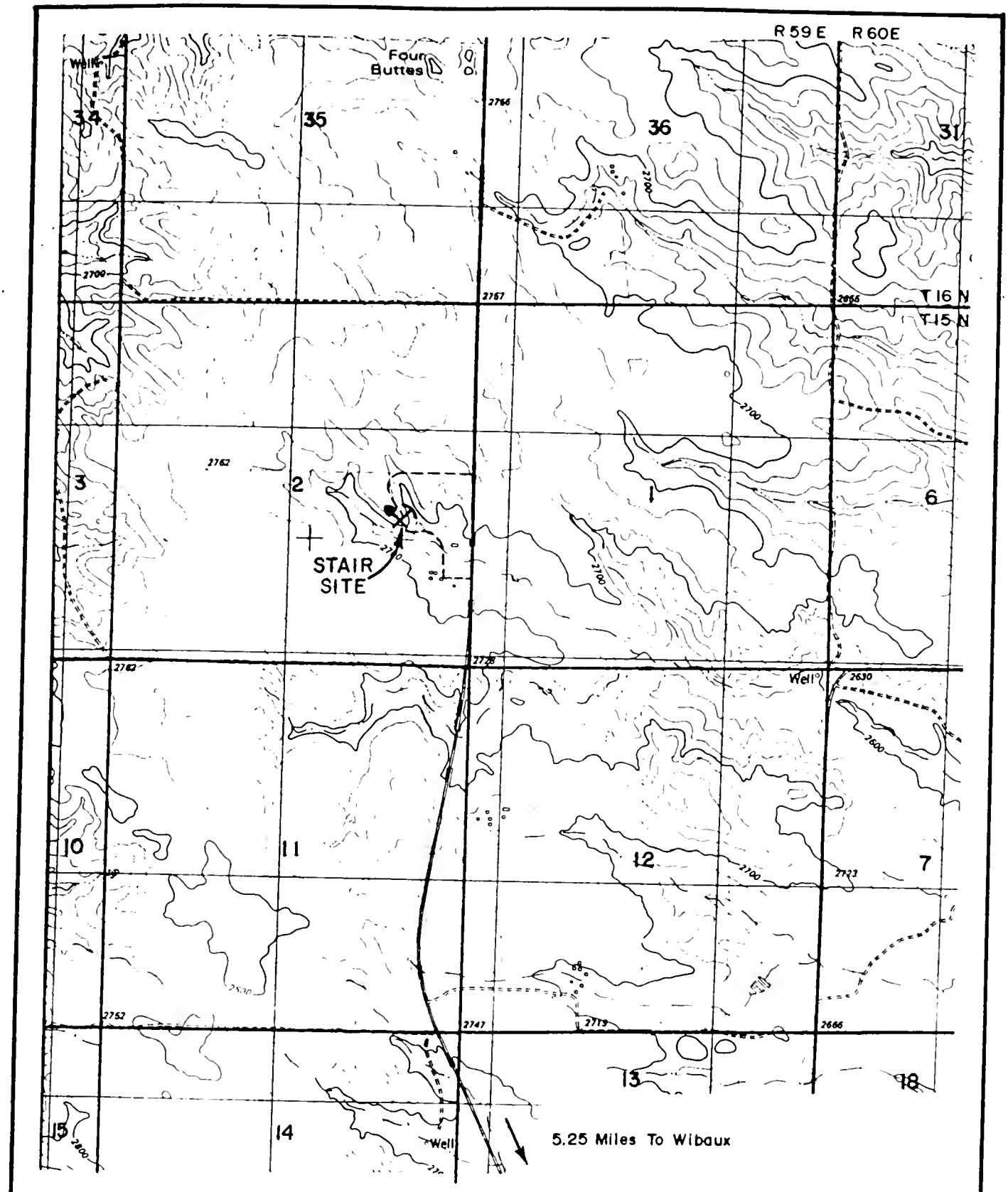
VICINITY MAP

SITE STAIR

WIBAUX COUNTY, MT; TOWNSHIP 15 N RANGE 59 E

SECTION(S) 2

MAP SCALE: 1" = 2.5 Miles



STATE OF MONTANA — DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU—RECLAMATION DIVISION

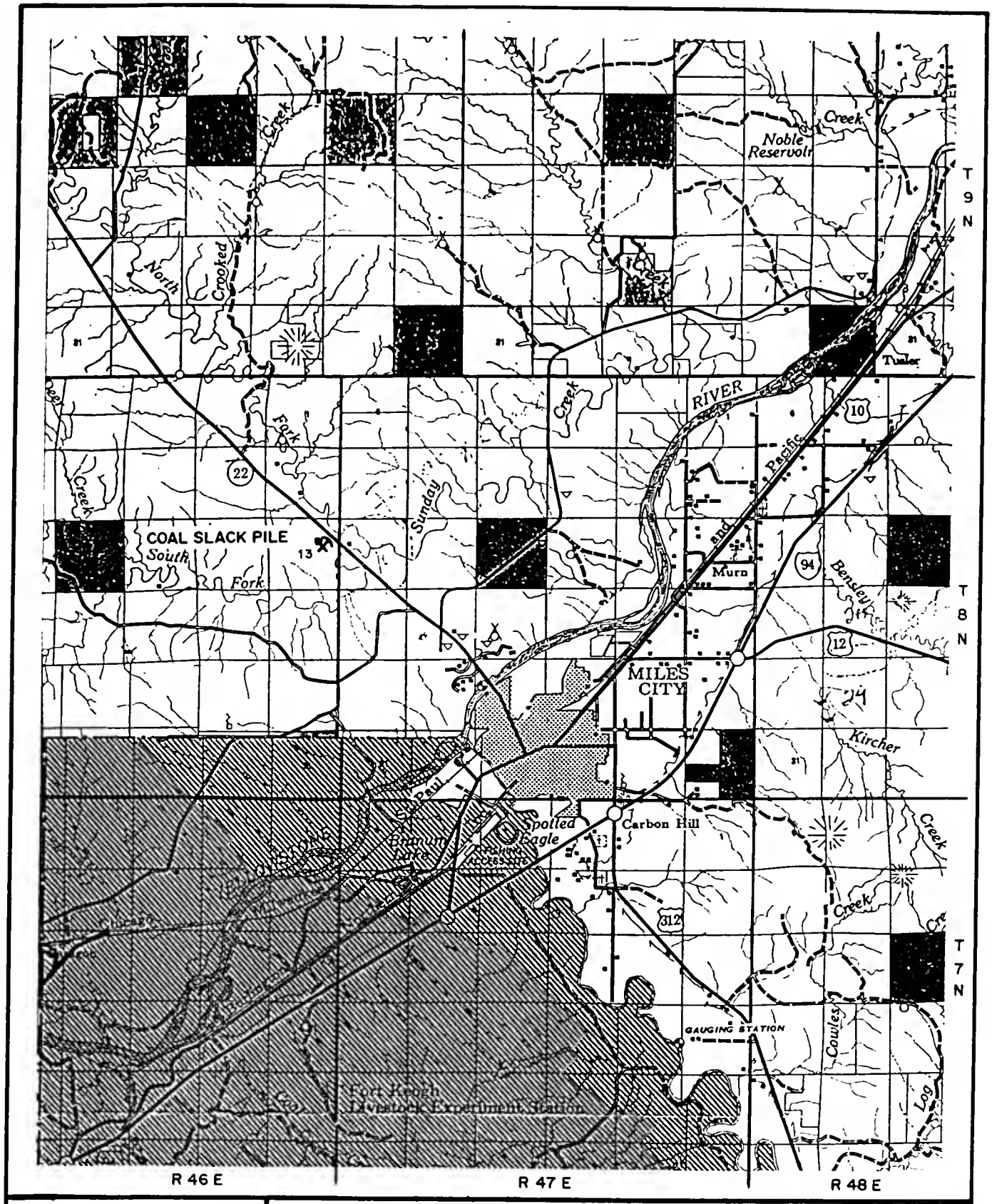
SITE MAP

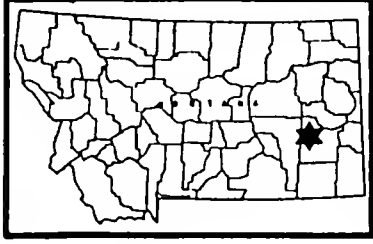
SITE STAIR

WIBAUX COUNTY, MT; TOWNSHIP 15N RANGE 59E

SECTION(S) 2

MAP SCALE: 1" = 2000' U.S.G.S. QUAD SHEET ODLAND DAM SW





STATE OF MONTANA — DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU—RECLAMATION DIVISION

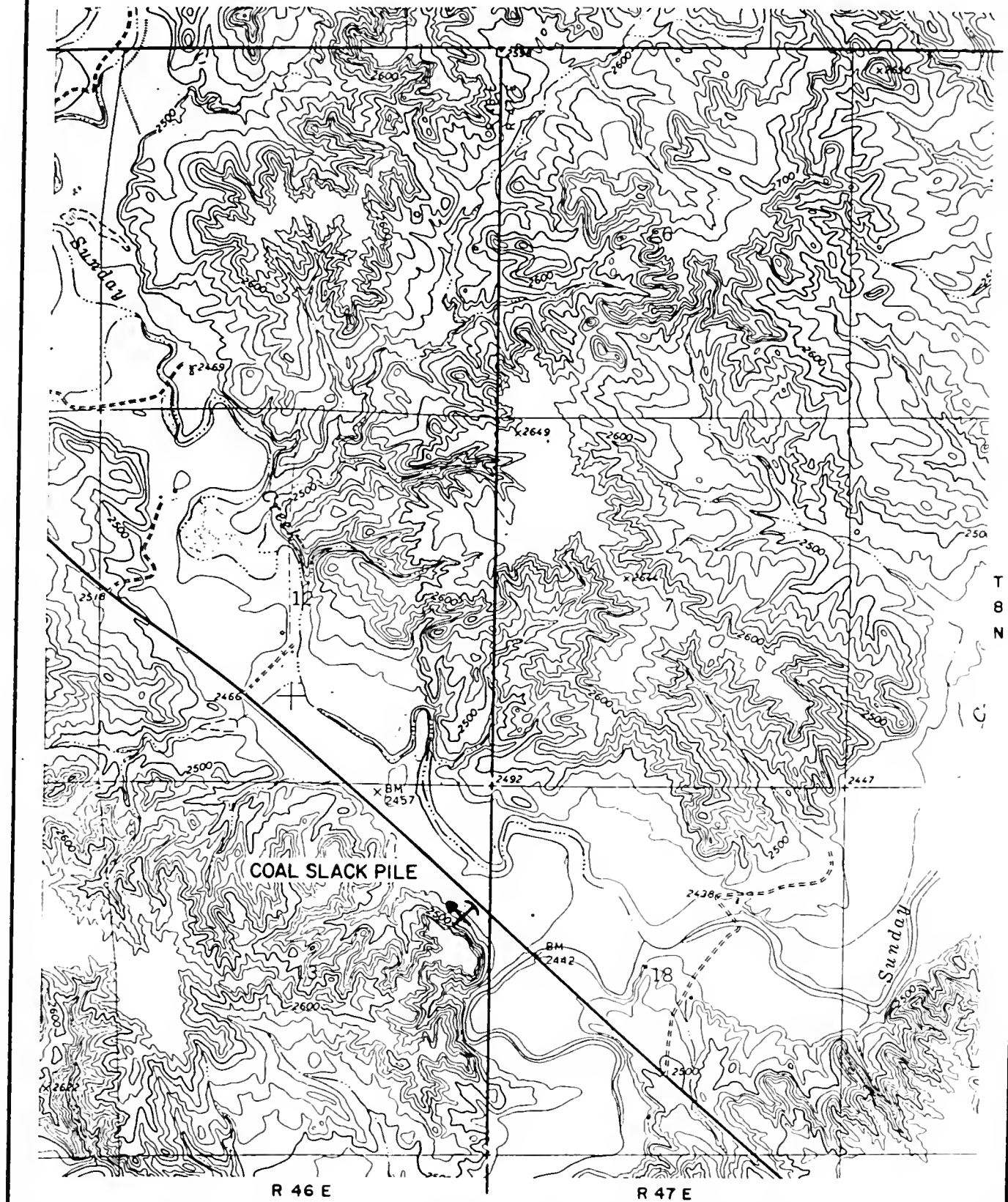
VICINITY MAP

SITE COAL SLACK PILE

CUSTER COUNTY, MT; TOWNSHIP 8N RANGE 46E

SECTION(S) 13-SE/4 NE/4

MAP SCALE: 1" = 2 MILES



STATE OF MONTANA — DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU—RECLAMATION DIVISION

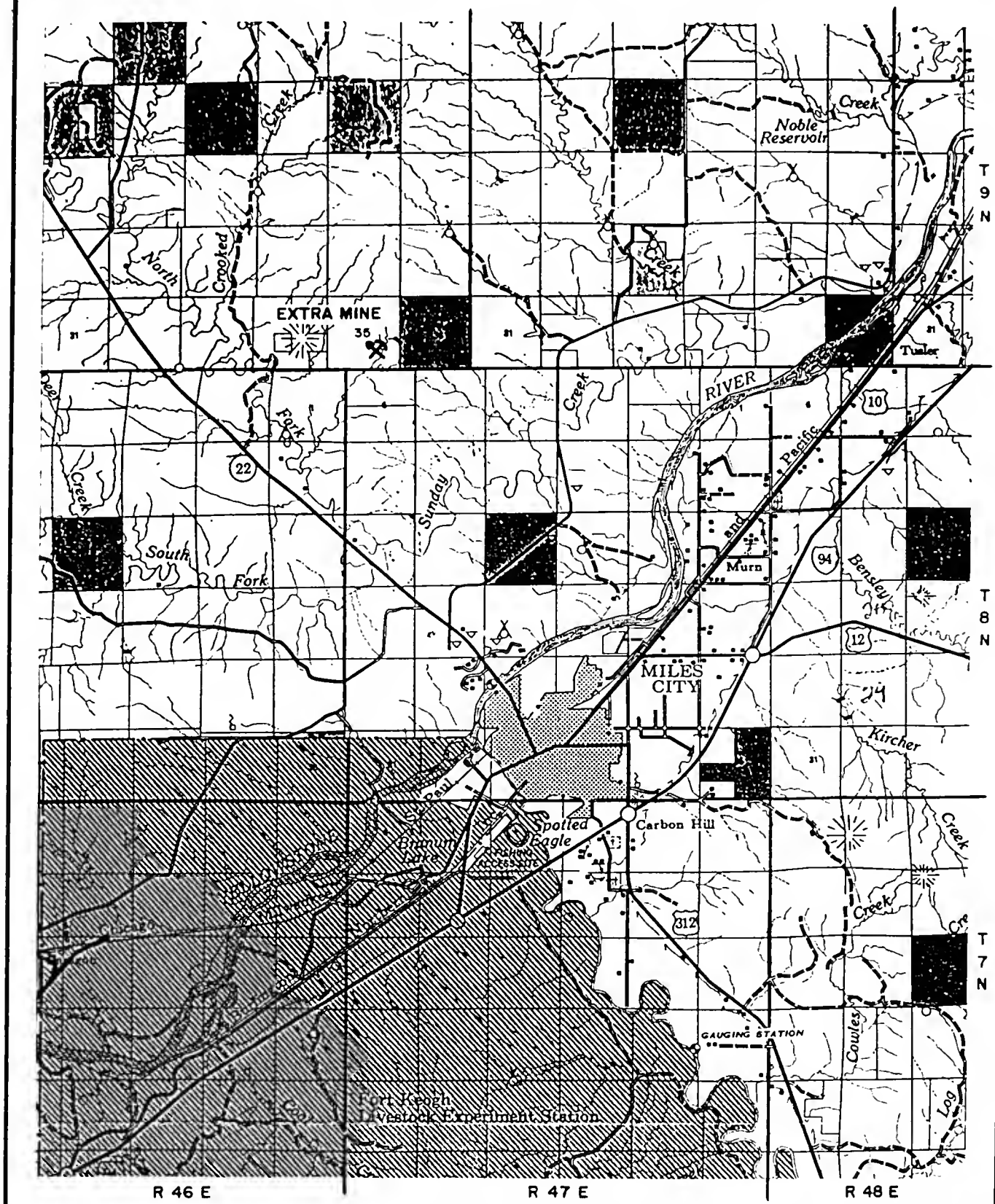
SITE MAP

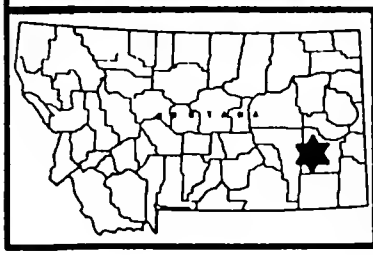
SITE COAL SLACK PILE

CUSTER COUNTY, MT; TOWNSHIP 8N RANGE 46E

SECTION(S) 13-SE/4NE/4

MAP SCALE: 1" = 2000' U.S.G.S. QUAD SHEET BIG HILL





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VICINITY MAP

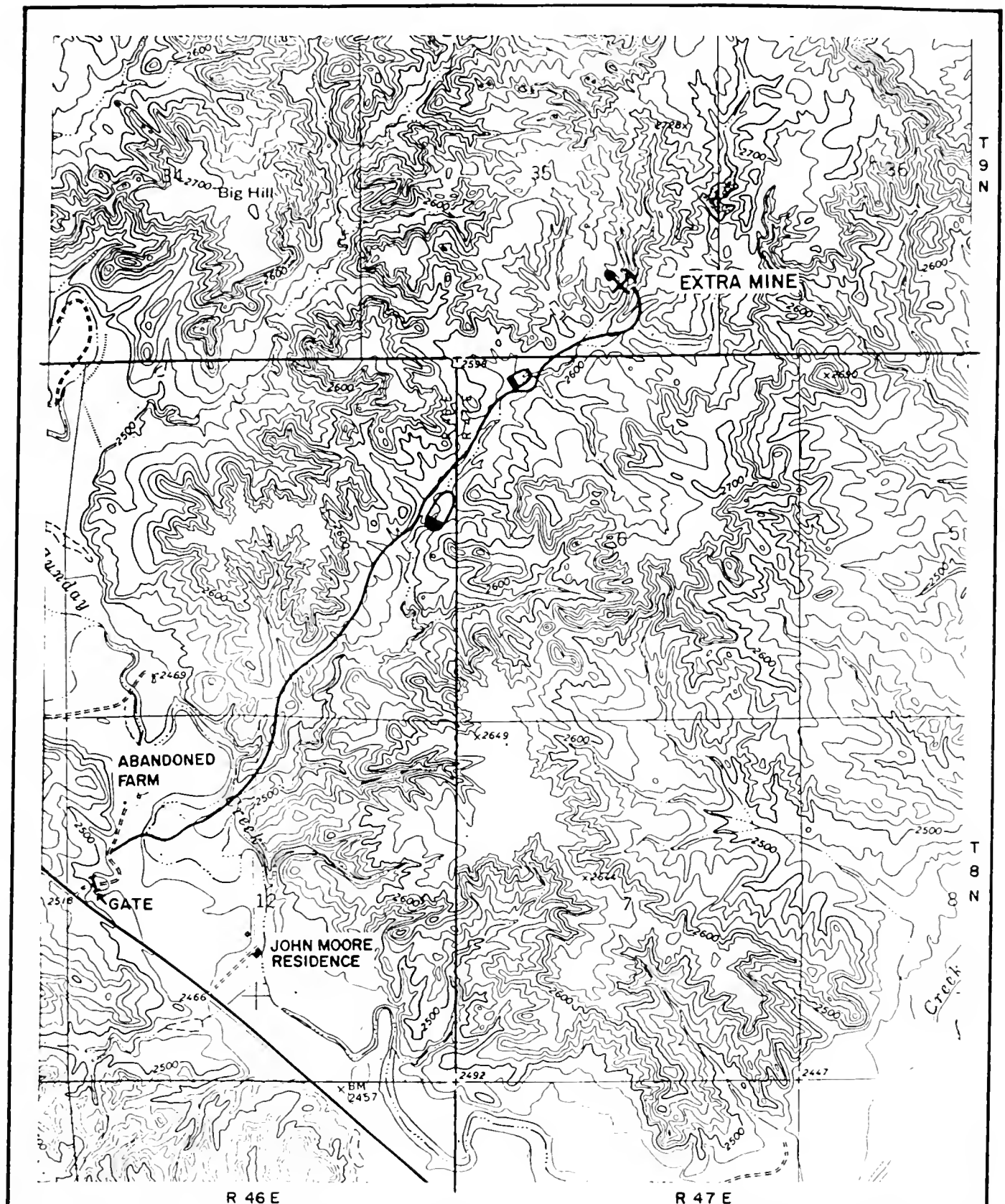
N

SITE EXTRA MINE

CUSTER COUNTY, MT; TOWNSHIP 9N RANGE 46E

SECTION(S) 35-SE/4

MAP SCALE: 1" = 2 MILES



STATE OF MONTANA — DEPARTMENT OF STATE LANDS
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SITE MAP

SITE EXTRA MINE

CUSTER COUNTY, MT; TOWNSHIP 9N RANGE 46E

SECTION(S) 35-SW/4SE/4

MAP SCALE: 1" = 2000' U.S.G.S. QUAD SHEET BIG HILL

D. History

Historical Research Associates from Missoula conducted the historical survey of the three main project areas. The results of this survey are presented below:

1. SUNDAY CREEK

The bedrock that outcrops throughout this region is part of the Fort Union Formation. Coal or lignite seams associated with this formation have supplied the fuel needs of local ranchers and townspeople. Timber being scarce in much of the region, coal or lignite represents the most readily available fuel to early non-Indian settlers. A 1904 report of the Inspector of Coal Mines of the State of Montana mentions Custer County coal mines, only in passing:

> There are a few small operations in this county which produce about 10,000 tons of inferior lignite for local consumption, principally used at Miles City. These small properties are only worked to any appreciable extent during the winter season (Welsh 1904).

The Sunday Creek project area falls within the Miles City Coal Field (Collier and Smith 1909). Coal seams that outcrop in the vicinity are classified as part of the Kircher coal bed and are described as follows:

> As it is situated near drainage levels, its croppings are usually covered by river gravel or wash from the hills... There are... sufficient exposures to indicate that the bed is exceedingly variable and workable only in small areas (Collier and Smith 1909).

The earliest specific references to mining along Sunday Creek near the present reclamation area comes from a 1906 U.S. Geological Survey Bulletin, in which mining is described as follows:

> North of Yellowstone River, on Sunday Creek and its tributaries, coal outcrops at many points in Townships 8, 9 and 10, Range 47 East. It has been mined for several years just below the bridge over South Sunday Creek, in Section 18, Township 8 North, Range 47 East. The bed outcrops in the cut bank along the stream for a distance of 300 feet and lies only 2 to 3 feet above the bed of the creek. It is from 4 to 4 1/2 feet thick and the coal is of good quality.

Mining is carried on here partly by stripping, the soft sandstone being blasted off in large blocks, and partly by drifting in along the bed. The coal is mined only during the winter and is sold in Miles [City] (Leonard 1906).

D. History (Cont.)

Although several commercial mines located north and west of Miles City were supplying coal to the town in 1909, mining along Sunday Creek was limited to "stripping at a number of areas" (Collier and Smith 1909).

1A. SUNDAY CREEK NORTH AREA

Tol Moore and Charles Moore, brothers and long-time residents of the area, and whose family currently owns the site, indicated that this is the remains of the mine worked by Joe Slappert and his partner Red Lawrence. Tol Moore remembers that four or five people worked at the mine, but that Slappert was the boss. Both Tol and Charles Moore (1987) indicated that Adit 4, the room hollowed out of the cut bank, was used by the miners as a shelter and a place to cook their meals. According to Charles Moore (1987), Slappert and Lawrence sold the coal to Miles City residents.

A prehistoric site was found near the North Area. HRA found the presence of fire-broken rock, spent cores, and unifacially modified flake, indicating that the area may have been used as a campsite. Conversations with professional archaeologists familiar with the project area indicate that this site is similar to other deflated (i.e., the deposits at the site have been affected by wind erosion) lithic scatters located within the Sunday Creek drainage. Neither the prehistoric or historic components are eligible for nomination to the National Register of Historic Places.

1B. SUNDAY CREEK WEST

Little is known regarding the mining in this area. There is no record of a coal lease in the historical index maintained by the BLM office in Billings, and none of the Moore family members (the current landowners) could comment on when or by whom the mine was operated, other than that it was most likely mined prior to the 1940's (T. Moore 1987; C. Moore 1987; Mehrer 1987). It is likely that this site represents the remains of a small wagon mine, operated by one or a few individuals for local consumption.

1C. SUNDAY CREEK EAST

As with the Sunday Creek West site, none of the interviewed members of the Moore family could associate a name or date of mining with this area. Also, the historical index maintained by the BLM office in Billings contains no record of a coal lease or permit in this area. It is likely that the features located at this site represent the remains of a small wagon mine.

1D. SUNDAY CREEK SOUTH

Spectrum Engineering could not obtain any information to identify individuals responsible for mining in this area, or at what time the mining took place. No underground maps or production records could be found.

D. History (Cont.)

2. HAY CREEK 30

The Hay Creek 30 project area lies in the extreme northwest corner of Custer County, near the point where Rosebud, Garfield, Custer, and Prairie Counties meet. The site lies within a fork of the Wolf Creek drainage, which in turn is a tributary of Hay Creek and part of the Missouri River drainage basin.

Although none of the early U.S. Geological Survey Bulletins deal specifically with the Hay Creek 30 reclamation area, this locality lies directly adjacent to the north boundary of the Little Sheep Mountain Coal Field, first discussed in 1911 (Rogers 1913). The bedrock outcroppings in this area are part of the Fort Union formation. In the township immediately south of the site, the coal is described as follows:

> Bed HH, ... is fairly thick, containing in the western part of the township a maximum of 8 feet of coal... To the east, its thickness is less, and in Section 1 it carries only about 3 feet of coal. ... As shown on the coulees, which dissect the north side of the divide [between the Yellowstone and Missouri River drainages]. Its outcrop, except at the head of these ravines, is generally burned. In several coulees, notably in the westernmost, considerable stripping has been done by the ranchers in the vicinity (Rogers 1911).

The Hay Creek 30 site lies directly north of the northwest corner of the township described above, and the coal being mined there may represent an extension of the beds described.

Little information was obtained concerning the history of this site. The HRA field crew was referred to Carl Hirsch, a long-time resident of the area, as someone familiar with the mine. Mr. Hirsch (1987) indicated that the mine was first opened by Mike Schmitt. The parcel of land that contains the site is included in the homestead entry patented by Michael Schmitt in November 1926 (Custer County Land Status Records, Office of the Clerk and Recorder, Custer County Courthouse, Miles City, Montana). The coal on this parcel was reserved to the United States. However, the State Office of the BLM has no record of a coal lease or permit for the area. Probably, the coal was mined in trespass, for local consumption.

Mr. Hirsch (1987) also indicated that a person named Bill Sauder (or Saunder?) mined the area during the 1930's, and hauled the coal to Miles City to supply the Civilian Conservation Corps (CCC). The Miles City CCC camp operated from 1933 until 1942 (CCC information file, Lolo National Forest, Cultural Resource Management files), so Sauder's tenure at the mine could have taken place any time within this ten-year period.

D. History (Cont.)

In addition, Bud Taylor, whose family has owned the land since the 1950's, indicated that he worked at this mine during the 1930's. The Taylor family extracted the coal only for their own fuel needs (Taylor 1987).

The prehistoric component of this site consists of a sparse scatter of lithic material located at the edge of the ridge top immediately above the coulee that contains the coal mine. The predominant material type is grey porcelanite, with flakes that range in size from less than 1 cm to 4 cm in length. However, the larger flakes display cortex on one or more surfaces. In addition to the porcelanite, one piece of light and dark brown mottled chalcedony was found at the site. One fragment of a reddened quartzite cobble also was observed on the surface of the site. A small piece of bone (rib fragment) was found protruding from the cut bank below the lithic material, but it is unclear as to whether or not this material was culturally or naturally deposited.

Although it appears that the mine was operated intermittently for a number of years, there is no documentation that definitely links this mine to significant individuals or specific events. Also, the remains at the site lack physical integrity, thus limiting its ability to adequately represent the more general, historically significant activity of small-scale local coal mining.

Similarly, the prehistoric component at this site does not appear to contain significant information that would contribute to our understanding of the prehistory of the area. No temporally diagnostic cultural material was observed at the site, and the results of subsurface testing indicate that no buried remains are present within the area to be impacted by reclamation (HRA 1987).

3. CHALK BUTTE

The parcel of land that contains the Chalk Butte location was originally patented by the Northern Pacific Railway Company in 1913. Ownership of the coal went to the railroad with the surface rights, and any mining in the area would have been arranged with the railroad, unless the coal was mined in trespass. No specific information was found regarding the extraction of coal from this area. It probably was mined for local use only, perhaps during the 1930's or before.

There are no cultural resource features at this site. The coal was mined from the bank until increasing overburden depth prevented them from continuing. The only remains are a naturally revegetated coal slack pile. Apparently the miners started a fire which got away from them and got into the coal seam on the other site of the coulee from their mine. This outcrop fire burned until the late 1950's leaving behind deep surface fissures.

D. History (Cont.)

In November 1987, Spectrum Engineering drilled 3 holes and installed temperature probes to verify if the fire had indeed burned itself out. The probes verified that the fire was out. The results are presented below:

Borehole	Probe Depth (Feet)	Temperature in Coal (°F)	Temperature before backfilling 1' above Coal	Temperature after backfilling 1' above Coal
1	34	58.9	59.1	58.4
2	37	55.9	55.9	53.6
3	26	54.0	54.1	52.0

4. STAIR

This mine operated from 1935 to 1945 producing 16,462 tons during its 10 year life. The reader is referred to Stair Project Final Report dated January 1988 for construction project MT A/E 86-46-129 for a more complete description of the history, site description and previously completed reclamation.

5. COAL SLACK PILE

The history of this site is regionally covered under the Sunday Creek site.

6. EXTRA MINE

The history of this site is regionally covered under the Sunday Creek site.

II. DESCRIPTION OF RECLAMATION PROJECT

A. Site Hazards and Problems

1. SUNDAY CREEK

The Sunday Creek North Site consisted of six open adits in the cut bank of a small coulee cut in the first terrace above Sunday Creek, five subsidence areas located on top of terrace and one coal slack pile below the terrace and adit number six.

The Sunday Creek East Site is located 0.35 miles southwest of the North site and is located on the edge of a dissected terrace. This site consisted of one adit in the edge of the terrace and five subsidence features on the sloping edge of the terrace west of the adit. One combination waste pile and coal slack pile is located below and east of the adit. The structural remains of two buildings were located west of the subsidence area.

Sunday Creek West Site is located just northwest of the East Site. The West Site consisted of one open adit, one adit depression, four subsidence pits, two waste dumps and mine-related debris. This site plans show all the disturbance areas.

Sunday Creek South Site is located approximately 1600 feet south of the East site across Highway 59. The South Site is located at the toe of a ridge above the Sunday Creek drainage bottom. The mining-related remains are limited to one adit opening, two adit depressions, two subsidence pits, one coal slack pile, one building excavation area and mining-related debris.

All of the disturbance features mentioned are shown on the site plans.

2. HAY CREEK 30

The Hay Creek 30 site consists of a subsided area over the adit entrance, a coal slack pile in the drainage bottom, and an air vent on the ridge above the collapsed adit entrance. A small amount of debris was located in a building excavation area adjacent to the coal slack pile.

3. CHALK BUTTE

This site is located approximately 300 feet west of the Hay Creek 30 site. The hazards consist of 1055 feet of surface fissures (cracks) caused by burning of the coal seam beneath the surface. Numerous small sink holes, one large sink hole, and 3 temperature probe drill holes also existed at the site.

A. Site Hazards and Problems (Cont.)

4. STAIR MAINTENANCE

The Stair Mine re-opened behind the original adit entrance which was backfilled during 1987.

5. COAL SLACK PILE

The coal slack pile site adjacent to Highway 59 was an actively eroding coal waste pile which was sterilizing other productive ground.

6. EXTRA MINE

The landowner identified another small mine north of the Sunday Creek site which had an open adit, some scattered debris and a coal slack pile. The contractor closed the adit, removed and disposed of the debris, regraded and buried the coal slack, and revegetated the disturbance.

B. Project Planning

The scope of work for each of the projects was to: 1) eliminate all safety hazards by backfilling the entrance to all adits, shafts, air vents, and surface fissures 2) bury and/or neutralize all coal slack areas, 3) remove all debris, 4) revegetate all disturbance areas.

Ed Gensler was the AMR Bureau representative. Gary Rome was the project engineer for the Sunday Creek sites and Bill Maehl was the project engineer for the Hay Creek 30 and Chalk Butte sites. Gary served as the overall project manager. Bill Wolff was the construction inspector for Spectrum Engineering.

Site plans for the Sunday Creek sites, Hay Creek 30, and Chalk Butte are included in this section of the Final Report. For the extra work, there are either site plans or site sketches included and verbal descriptions of the work following.

STAIR MAINTENANCE

The work here consisted of excavating the mine opening; removing the underground posts, girts, and cribbing; backfilling the resulting mine opening and subsidence; providing topsoil; revegetating; and fencing.

COAL SLACK PILE

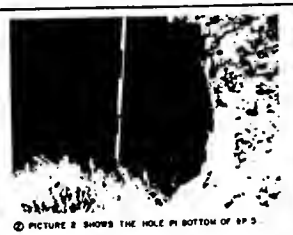
The coal slack pile adjacent to Highway 59 was regraded, neutralized, and buried with topsoil in an adjacent subsidence. The whole disturbance was then revegetated.

B. Project Planning (Cont.)

- EXTRA MINE

At this site, the contractor closed the adit, removed and disposed of the debris, regraded and buried the coal slack, and revegetated the disturbance.

① PICTURE 1 SHOWS SUBSIDENCE PIT 8



② PICTURE 2 SHOWS THE HOLE IN BOTTOM OF SP 5

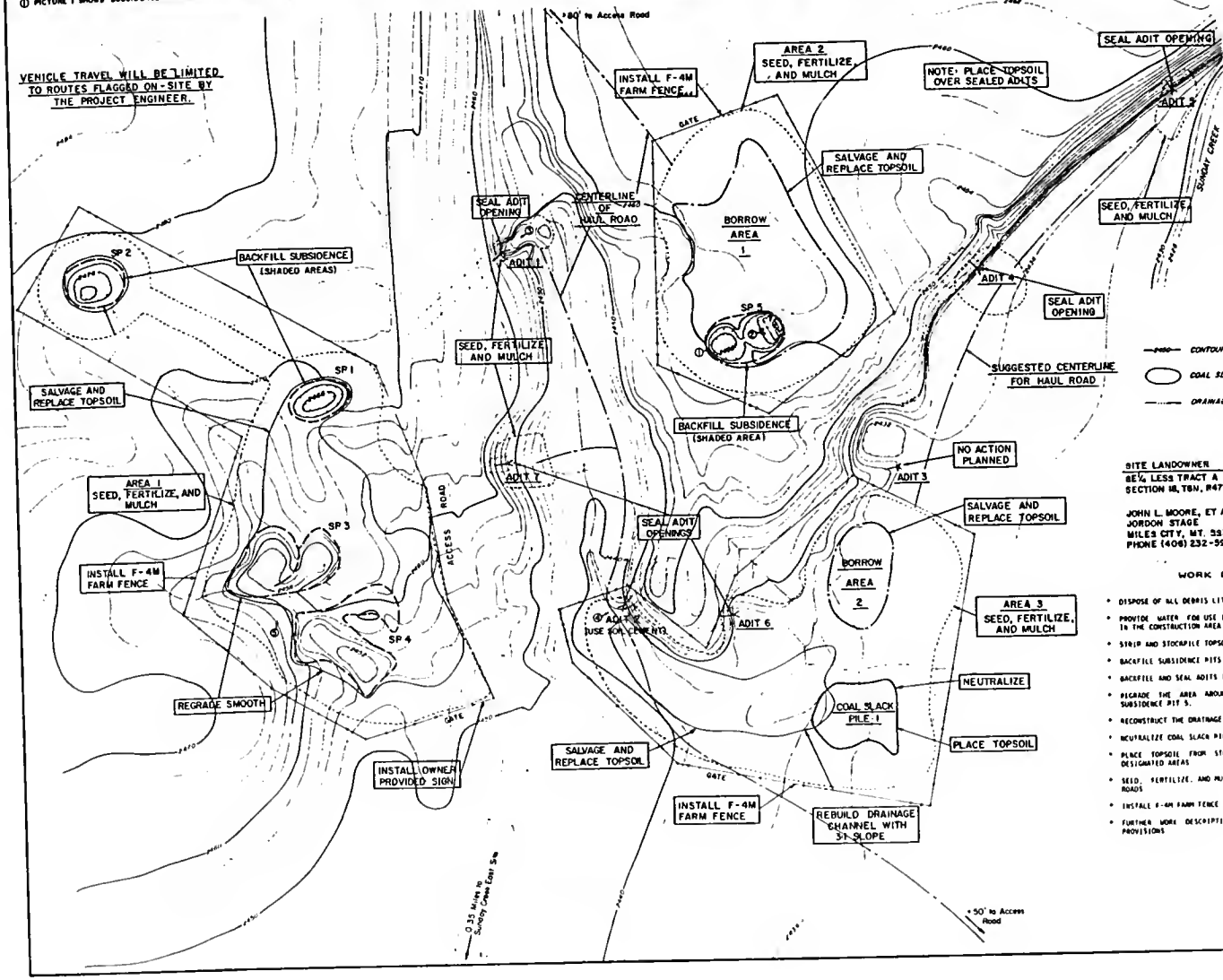
③ PICTURE 3 SHOWS ADIT 1

④ PICTURE 4 SHOWS ADIT 2

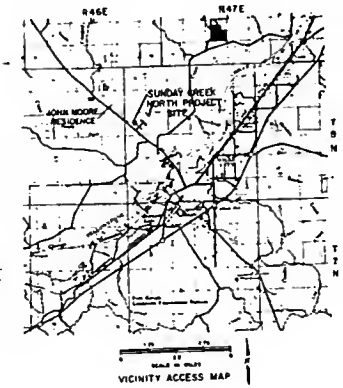
⑤ PICTURE 5 SHOWS SUBSIDENCE PIT 3

STATE LOCATION MAP

VENICLE TRAVEL WILL BE LIMITED TO ROUTES FLAGGED ON-SITE BY THE PROJECT ENGINEER.



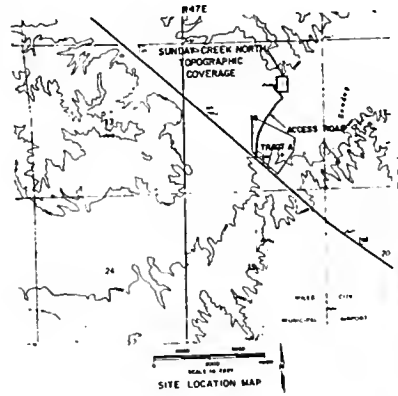
ADDITIONAL INFORMATION PERTAINING TO THIS SITE MAY EXIST IN THE DEPARTMENT OF STATE LANDS' FILES OR AT SPECTRUM ENGINEERING'S OFFICE. THIS MATERIAL IS AVAILABLE FOR REVIEW BY ANY INTERESTED PARTY



VICINITY ACCESS MAP

LEGEND

- CONTOUR
- COAL SLACK
- DRAINAGE
- PICTURE NUMBER AND ORIENTATION
- SP1 SUBSIDENCE PIT (SP) NUMBER
- OPEN ADIT
- CLOSED ADIT



SITE LOCATION MAP

SITE LANDOWNER
NE¼ LESS TRACT A
SECTION 18, T8N, R47E

JOHN L. MOORE, ET AL.
JORDON STAGE
MILES CITY, MT. 59301
PHONE (406) 232-5949

ACCESS LANDOWNER
TRACT A IN SE¼
SECTION 18, T8N, R47E

MARY ELLEN MEHRER
1109 WEST WATER
LEWISTOWN, MT. 59457
PHONE (406) 538-3302

WORK DESCRIPTION

- DISPOSE OF ALL DEBRIS LITTERING THE SITE
- PROVIDE WATER FOR USE IN COMPACTION AND FOR DUST SUPPRESSION IN THE CONSTRUCTION AREA AND ON THE HAUL ROADS
- STRIP AND STOCKPILE TOPSOIL FROM ALL DISTURBANCE AREAS
- BACKFILL SUBSIDENCE PITS 1, 2, AND 5
- BACKFILL AND SEAL ADITS 1, 2, 4, 5, 6, AND 7
- REGRADE THE AREA AROUND SUBSIDENCE PITS 3 AND 4, AND AROUND SUBSIDENCE PIT 5.
- RECONSTRUCT THE DRAINAGE CHANNEL ADJACENT TO ADIT 2
- NEUTRALIZE COAL SLACK PILE 1
- PLACE TOPSOIL FROM STOCKPILES AND BORROW AREAS TO COVER DESIGNATED AREAS
- SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS INCLUDING HAUL ROADS
- INSTALL F-4M FARM FENCE AS SHOWN
- FURTHER WORK DESCRIPTION DETAILS CAN BE FOUND IN THE SPECIAL PROVISIONS

NOTICE

AN ABANDONED COAL MINE UNDERLIES THIS SITE MANY POTENTIAL HAZARDS EXIST. THE EXTENT OF THESE HAZARDS IS NOT FULLY KNOWN. CONTRACTORS AND OTHER PERSONS WORKING AT THE SITE SHALL APPRISE THEMSELVES OF THE CONDITIONS AND TAKE WHATEVER STEPS ARE DEEMED NECESSARY TO INSURE SAFETY WHILE PERFORMING THEIR DUTIES

SITE PLAN AND GENERAL LAYOUT

SUNDAY CREEK NORTH SITE

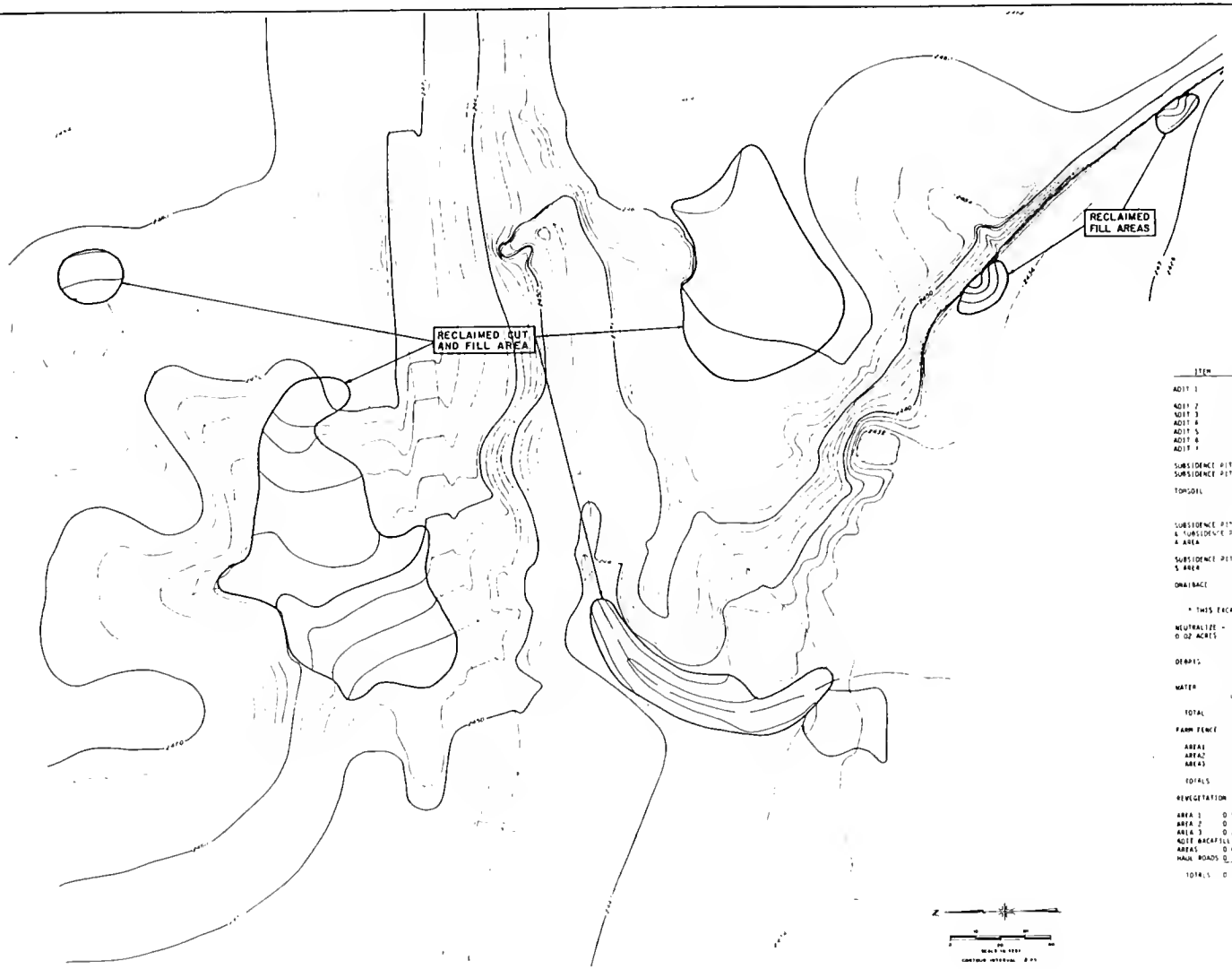
SECTION 18, T8N, R47E
CUSTER COUNTY, MONTANA

STATE OF MONTANA
DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION

DATE	BY	CHECKED BY	APPROVED BY	NO.	REVISIONS	BY
12-28-87	DLO					

SPECTRUM ENGINEERING
Mining and Civil Engineers
3308 4th AVE NORTH
BILLINGS, MONTANA

SHEET NO 1 of 2



SUNDAY CREEK NORTH SITE

ESTIMATED POST RECLAMATION TOPOGRAPHY

NOTE THIS TOPOGRAPHY IS AN ESTIMATE OF POST RECLAMATION TOPOGRAPHY ACTUAL POST RECLAMATION TOPOGRAPHY MAY VARY SLIGHTLY

WORK SUMMARY TABLE

ITEM	DESCRIPTION	ACTION	QUANTITY
ADIT 1	6 x 6 TRIANGULAR OPENING	SEAL	6 LCM
ADIT 2	8 x 3 OPENING	SEAL with SOIL CEMENT	10 LCM
ADIT 3	CLOSED	NO ACTION PLANNED	---
ADIT 4	6 x 5 OPENING	BACKFILL AND SEAL	40 LCM
ADIT 5	8 x 3 OPENING	BACKFILL AND SEAL	6 LCM
ADIT 6	6 x 3 OPENING	SEAL	7 LCM
ADIT 9	5 x 1 1/2 OPENING	SEAL	4 LCM
SUBSIDENCE PIT 1	20 x 15 x 4'	BACKFILL	25 LCM
SUBSIDENCE PIT 2	20 x 10 x 5	BACKFILL	30 LCM
TOPSOIL		STRIP AND STOCKPILE PLACE FROM STOCKPILES AND TOPSOIL ACROSS HAULS	370 LCM 370 LCM
SUBSIDENCE PIT 3 & SUBSIDENCE PIT 4 AREA	SEE TOPOGRAPHIC MAP	REGRADE AND BACKFILL	150 LCM
SUBSIDENCE PIT 5 AREA	SEE TOPOGRAPHIC MAP	REGRADE AND BACKFILL	50 LCM
DRAINAGE	SEE TOPOGRAPHIC MAP	REDIRECT RECONSTRUCT AND STABILIZE	40 LCM*

* THIS EXCAVATED MATERIAL WILL BE USED TO BACKFILL AND SEAL THE OPEN ADITS

NEUTRALIZE - 0.02 ACRES	COAL SLACK PILE 1	100 % CALCIUM CARBONATE APPLICATION (2.1 TONS/ACRE 6" SLICE)	100 LBS
DEBRIS	BIODEGRADABLE	DISPOSE OF	1 PICKUP LOAD
	NON-BIODEGRADABLE	DISPOSE OF	1 PICKUP LOAD
WATER	SUBSIDENCE/REGRADE AREAS	FOR COMPACTION	5,000 GALLONS
	CONSTRUCTION AREA/HAUL ROADS	DUST SUPPRESSION	2,000 GALLONS
TOTAL			7,000 GALLONS

FARM FENCE	TYPE 4-4W	SINGLE PANELS	DOUBLE PANELS	TYPE G-2 GATES
AREA1	450 LF	1 EACH	10 EACH	133 16 LF
AREA2	250 LF	1 EACH	5 EACH	137 16 LF
AREA3	330 LF	1 EACH	5 EACH	141 16 LF
TOTALS	1030 LF	3 EACH	20 EACH	131 48 LF

REVEGETATION		SEED APPLICATION (25 LBS PLS/ACRE)	FERTILIZER APPLICATION (192.5 LBS NUTRIENT/ACRE)	MULCH APPLICATION (3000 LBS/ACRE)
AREA 1	0.50 AC	3 LBS PLS	20 LBS	900 LBS
AREA 2	0.16 AC	4 LBS PLS	15 LBS	460 LBS
AREA 3	0.24 AC	6 LBS PLS	23 LBS	720 LBS
ADIT BACKFILL				
AREA5	0.05 AC	1 LBS PLS	5 LBS	150 LBS
HAUL ROADS	0.15 AC	4 LBS PLS	14 LBS	450 LBS
TOTALS	0.90 AC	22 LBS PLS	85 LBS	2,700 LBS

SITE PLAN AND GENERAL LAYOUT

SUNDAY CREEK NORTH SITE

SECTION 18, T8N, R47E

CUSTER COUNTY, MONTANA

STATE OF MONTANA

DEPARTMENT OF STATE LANDS

ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION

DATE 12-28-87

DRAWN BY DLD

CHECKED BY

APPROVED BY

NO. REVISION DATE BY

SPECTRUM ENGINEERING

Mining and Civil Engineers

SHEET NO 2 OF 2

VEHICLE TRAVEL WILL BE LIMITED TO ROUTES FLAGGED ON-SITE BY THE PROJECT ENGINEER.

ADDITIONAL INFORMATION PERTAINING TO THIS SITE MAY EXIST IN THE DEPARTMENT OF STATE LANDS' FILES OR AT SPECTRUM ENGINEERING'S OFFICE. THIS MATERIAL IS AVAILABLE FOR REVIEW BY ANY INTERESTED PARTY.

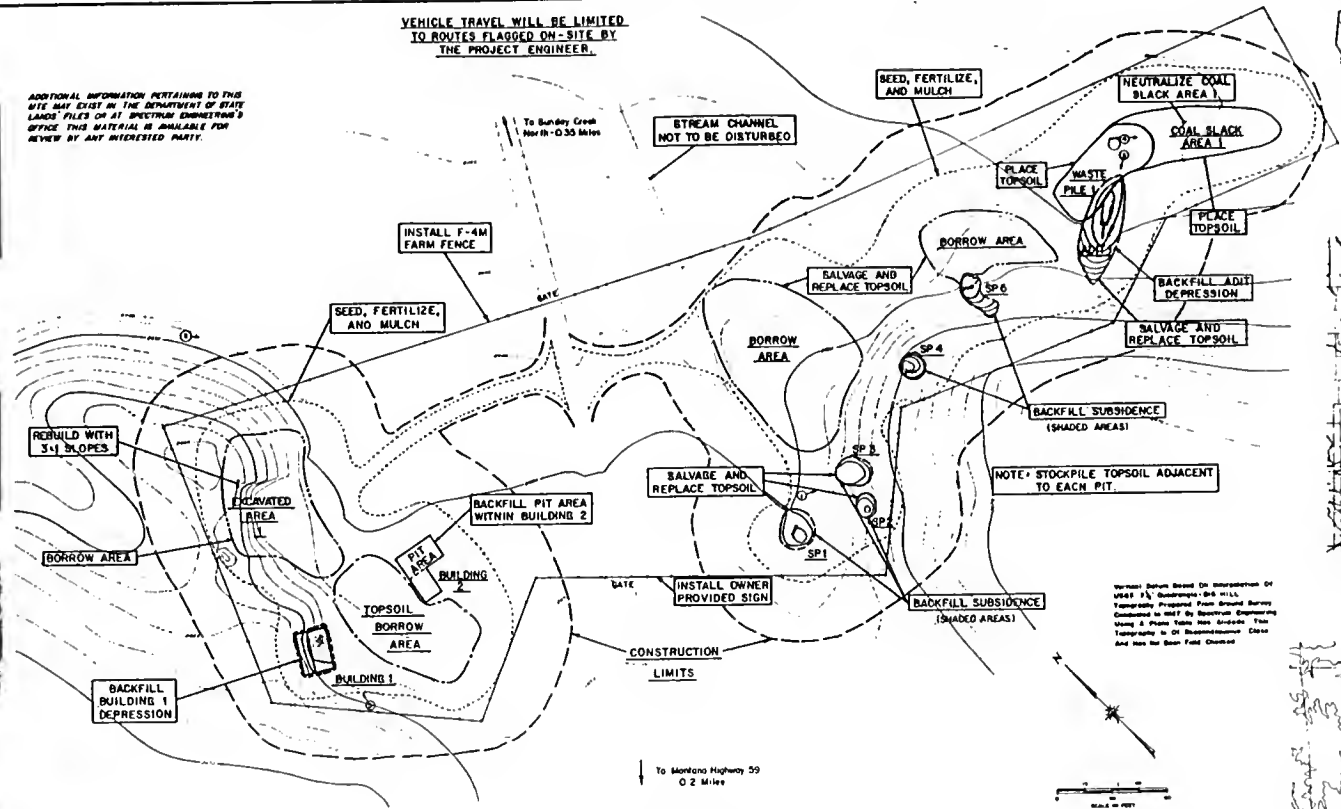
① PICTURE 1 SHOWS SUBSIDENCE PITS 3 AND 4

② PICTURE 2 SHOWS SUBSIDENCE PITS 2, 3, AND 4

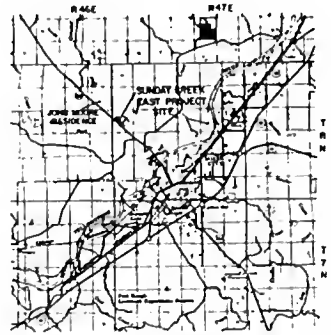
③ PICTURE 3 SHOWS ADIT DEPRESSION 1

④ PICTURE 4 SHOWS COAL SLACK AREA

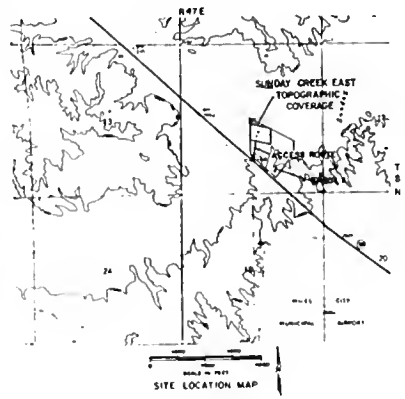
⑤ PICTURE [illegible] AND [illegible]



STATE LOCATION MAP



VICINITY ACCESS MAP



SITE LOCATION MAP

WORK DESCRIPTION

- DISPOSE OF ALL DEBRIS LITTERING THE SITE
- PROVIDE WATER FOR USE IN COMPACTION AND FOR DUST SUPPRESSION IN THE CONSTRUCTION AREAS AND ON THE HAUL ROADS
- STRIP AND STOCKPILE THE TOPSOIL FROM WITHIN SUBSIDENCE PITS 1 THROUGH 5, ADIT DEPRESSION 1, AND THE BORROW AREAS.
- BACKFILL SUBSIDENCE PITS 2 THROUGH 5, ADIT DEPRESSION 1, AND BUILDING EXCAVATIONS 1 AND 2, WITH MATERIAL FROM THE BORROW AREAS
- NEUTRALIZE COAL SLACK AREA 1
- REGRADE THE EXCAVATED AREA 1
- PLACE TOPSOIL FROM THE TOPSOIL STOCKPILES AND THE TOPSOIL BORROW AREA TO COVER THE BORROW AREAS, THE BACKFILLED SUBSIDENCE PITS, THE ADIT DEPRESSION AREA, COAL SLACK AREA 1, WASTE PILE 1, AND THE BUILDING 1 AND 2 AREAS
- FERTILIZE, SEED, AND MULCH ALL DISTURBED AREAS INCLUDING HAUL ROADS.
- INSTALL F-4M FARM FENCE AS SHOWN
- FURTHER WORK DESCRIPTION DETAILS CAN BE FOUND IN THE SPECIAL PROVISIONS

WORK SUMMARY TABLE

ITEM	DESCRIPTION	ACTION	QUANTITY
ADIT 1 DEPRESSION	40 × 23 × 6'	BACKFILL	85 LCY
SUBSIDENCE PIT 3	21 × 20 × 5'	BACKFILL	30 LCY
SUBSIDENCE PIT 2	13 × 10 × 5'	BACKFILL	7 LCY
SUBSIDENCE PIT 3	20 × 14 × 5'	BACKFILL	15 LCY
SUBSIDENCE PIT 4	14 × 14 × 6'	BACKFILL	18 LCY
SUBSIDENCE PIT 5	27 × 10 × 4'	BACKFILL	55 LCY
BUILDING 1 EXC	23 × 17 × 6'	BACKFILL	58 LCY
BUILDING 2 EXC	22 × 17 × 4'	BACKFILL	45 LCY
REGRADE AREA	SEE TOPOGRAPHIC MAP	REGRADE	55 LCY
TOPSOIL		STRIP AND STOCKPILE	365 LCY
		PLACE FROM STOCKPILES AND BORROW AREAS	450 LCY
NEUTRALIZE - 0 ON ACRES	COAL SLACK AREA 1	100 % CALCIUM CARBONATE APPLICATION (6 1 TONS/ACRE/0" SLICE)	320 LBS
DEBRIS	BIODEGRADABLE		15 PICKUP LOADS
	NON-BIODEGRADABLE		2 PICKUP LOADS
WATER	SUBSIDENCE & REGRADE AREAS	FOR COMPACTION	3,500 GALLONS
	CONSTRUCTION AREA AND HAUL ROADS	DUST SUPPRESSION	2,000 GALLONS
	TOTAL		5,500 GALLONS
FARM FENCE	TYPE F-4M	INSTALL AS SHOWN	1,540 LF
	SINGLE PANELS		0 EACH
	DOUBLE PANELS		12 EACH
	TYPE G-2 GATE	INSTALL 2 AS SHOWN	32 LF

REVEGETATION	SEED APPLICATION (25 LBS PLS/ACRE)	FERTILIZER APPLICATION (90 - 5 LBS NUTRIENT/ACRE)	MULCH APPLICATION (3000 LBS/ACRE)
WEST OF ACCESS ROAD 0.99 AC	10 LBS PLS	32 LBS	1,200 LBS
EAST OF ACCESS ROAD 0.80 AC	19 LBS PLS	78 LBS	2,400 LBS
HAUL ROADS 0.05 AC	2 LBS PLS	5 LBS	150 LBS
TOTALS 1.74 AC	31 LBS PLS	115 LBS	3,750 LBS

LEGEND

- CONTOUR
- COAL SLACK
- DRAINAGE
- PICTURE NUMBER AND ORIENTATION
- SUBSIDENCE PIT (SP) NUMBER
- CLOSED ADIT

SITE LANDOWNER	ACCESS LANDOWNER
TRACT A, SE¼ SECTION 18	SE¼ SEC 18, LESS TRACT A
MARY ELLEN MEHRER	JOHN L MOORE, ET AL
1109 WEST WATER	JORDON STAGE
LEWISTOWN, MT 59457	MILES CITY, MT 59301
PHONE (406) 538-9302	PHONE (406) 232-5949

NOTICE

AN ABANDONED COAL MINE UNDERLIES THIS SITE MANY POTENTIAL HAZARDS EXIST. THE EXTENT OF THESE HAZARDS IS NOT FULLY KNOWN. CONTRACTORS AND OTHER PERSONS WORKING AT THE SITE SHALL APPRISE THEMSELVES OF THE CONDITIONS AND TAKE WHATEVER STEPS ARE DEEMED NECESSARY TO INSURE SAFETY WHILE RECLAIMING THEIR ENTIES

SITE PLAN AND GENERAL LAYOUT

SUNDAY CREEK EAST SITE

SECTION 18, T8N, R47E
CUSTER COUNTY, MONTANA

STATE OF MONTANA
DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION

SPECTRUM ENGINEERING
Mining and Civil Engineers

SHEET NO 1 OF 1

VEHICLE TRAVEL WILL BE LIMITED TO ROUTES FLAGGED ON SITE BY THE PROJECT ENGINEER.

INSTALL F-AM FARM FENCE

ACCESS ROUTE

NOTE ALL ACCESS ROADS WILL BE SEEDED, FERTILIZED, AND MULCHED.

INSTALL OWNER PROVIDED SIGN

D.35 Miles to Main Highway

TOPSOIL STOCKPILE AREA

BORROW AREA

TOPSOIL BORROW AND STOCKPILE AREA

NO ACTION PLANNED

WASTE DUMP 1

ADIT 2

SP 1

SP 2

SP 3

SP 4

BACKFILL ADIT DEPRESSION

SEED FERTILIZE AND MULCH

SALVAGE AND REPLACE TOPSOIL

BACKFILL SUBSIDENCE (SHADED AREAS)

CONSTRUCTION LIMITS

SEAL ADIT OPENING

STOCKPILE TOPSOIL ADJACENT TO EACH PIT

SALVAGE EXISTING TOPSOIL

WASTE DUMP 2

SEED FERTILIZE AND MULCH

TOPSOIL BORROW AND STOCKPILE AREA

REPLACE STOCKPILED & BORROWED TOPSOIL

REBUILD WITH 5H:1V SLOPES

EXCAVATED PIT AREA

STREAM CHANNEL NOT TO BE DISTURBED

ADDITIONAL INFORMATION PERTAINING TO THIS SITE MAY EXIST IN THE DEPARTMENT OF STATE LANDS' FILES OR AT SPECTRUM ENGINEERING'S OFFICE. THIS MATERIAL IS AVAILABLE FOR REVIEW BY ANY INTERESTED PARTY.

Vertical Datum Based On Interpolation Of USGS 7½' Quadrangle: Elk Hill. Topography Prepared From Ground Survey Completed In 1987 By Spectrum Engineering Using A Prime Tabs And Geodolite. Tree Topography Is Of Reconnaissance Class And Was Be Seen Field Checked

① PICTURE 1 SHOWS SUBSIDENCE PIT 2

② PICTURE 2 SHOWS ADIT 2

③ PICTURE 3 SHOWS THE HOLE IN THE BOTTOM OF SUBSIDENCE PIT 3

④ PICTURE 4 SHOWS THE EXCAVATED PIT AREA

WORK DESCRIPTION

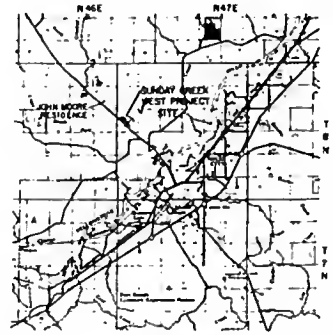
- DISPOSE OF ALL DEBRIS ON THE SITE.
- STRIP THE TOPSOIL FROM THE ADIT DEPRESSION, THE SUBSIDEACE PITS, THE EXCAVATED PIT, AND THE AREAS TO BE REGRADED AND STOCKPILE
- SEAL ADIT 2
- BACKFILL THE ADIT 2 DEPRESSION, SUBSIDENCE PITS 1 THROUGH 4 WITH MATERIAL FROM THE BORROW AREA
- REGRADE THE EXCAVATED PIT WITH MATERIAL FROM THE ADJACENT WASTE DUMP 2
- PLACE TOPSOIL FROM THE TOPSOIL STOCKPILES AND THE TOPSOIL BORROW AREAS TO THE DESIGNATED RETOPSOIL AREAS
- PROVIDE WATER FOR USE IN COMPACTION AND FOR DUST SUPPRESSION IN THE CONSTRUCTION AREAS AND ON THE HAUL ROADS
- FERTILIZE, SEED, AND MULCH ALL DISTURBED AREAS.
- INSTALL F-AR FARM FENCE AS SHOWN
- ADDITIONAL WORK DESCRIPTION DETAILS CAN BE FOUND IN THE SPECIAL PROVISIONS.

WORK SUMMARY TABLE

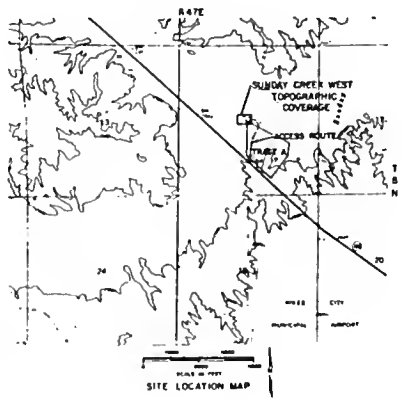
ITEM	DESCRIPTION	ACTION	QUANTITY
ADIT 1 DEPRESSION	31 x 21 x 5'	BACKFILL	-35 LCY
ADIT 2	6 1/2 x 6' OPENING	SEAL	10 LCY
SUBSIDENCE PIT 1	20 x 33 x 2'	BACKFILL	20 LCY
SUBSIDENCE PIT 2	20 x 30 x 8'	BACKFILL	30 LCY
SUBSIDENCE PIT 3	27 x 21 x 5'	BACKFILL	35 LCY
SUBSIDENCE PIT 4	24 x 20 x 8'	BACKFILL	15 LCY
EXCAVATED PIT AND WASTE DUMP 2 AREA	SEE TOPOGRAPHIC MAP	REGRADE	45 LCY
TOPSOIL		STRIP AND STOCKPILE	230 LCY
TOPSOIL		PLACE FROM STOCKPILES AND TOPSOIL BORROW AREAS	315 LCY
WATER	SUBSIDENCE/REGRADE AREAS CONSTRUCTION AREA AND HAUL ROADS TOTAL	FOR COMPACTION	3,000 GALLONS
		DUST SUPPRESSION	2,000 GALLONS
			5,000 GALLONS
FARM FENCE	TYPE F-AR SINGLE PANELS	INSTALL AS SHOWN	AND LF
	DOUBLE PANELS		2 EACH
	TYPE G-2 GATE	INSTALL E AS SHOWN	12 EACH
			16 LF

REVEGETATION	SEED APPLICATION (23 LBS PLS/ACRE)	FERTILIZER APPLICATION (92 5 LBS NUTRIENT/ACRE)	MULCH APPLICATION (3000 LBS/ACRE)
SUBSIDENCE PIT AREA 0.50 AC	7 LBS PLS	28 LBS	900 LBS
WASTE DUMP 2 AND PIT AREA 0.35 AC	8 LBS PLS	35 LBS	1,050 LBS
HAUL ROADS 0.48 AC	11 LBS PLS	43 LBS	1,400 LBS
TOTALS 1.33 AC	28 LBS PLS	104 LBS	3,350 LBS

STATE LOCATION MAP



VICINITY ACCESS MAP



SITE LOCATION MAP

LEGEND

- CONTOUR
- WASTE DUMP
- DRAINAGE
- PICTURE NUMBER AND ORIENTATION
- SUBSIDENCE PIT (SP) NUMBER & (DEPTH)
- OPEN ADIT
- CLOSED ADIT

SITE LANDOWNER
N½ SECTION 18, T8N, R47E

JOHN L. MOORE, ET AL.
JORDON STAGE
MILES CITY, MT 59301
PHONE (406) 232-5949

ACCESS LANDOWNER
TRACT A, SE¼ SECTION 18

MARY ELLEN MEHRER
1108 WEST WATER
LEWISTOWN, MT 59457

NOTICE

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SITE PLAN AND GENERAL LAYOUT

SUNDAY CREEK WEST SITE

SECTION 18, T8N, R47E
CUSTER COUNTY, MONTANA

STATE OF MONTANA
DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION

DATE 12-28-87
DRAWN BY DLO
CHECKED BY
APPROVED BY
NO. REVISIONS DATE BY

SPECTRUM ENGINEERING
Mining and Civil Engineers
3309 4th AVE NORTH
BILLINGS, MONTANA

SHEET NO 1 OF 1

① PICTURE 1 SHOWS ADIT 1 AND THE SURROUNDING SUBSIDENCE PIT 1

② PICTURE 2 SHOWS THE DEEPEST SECTION WITHIN SUBSIDENCE PIT 1

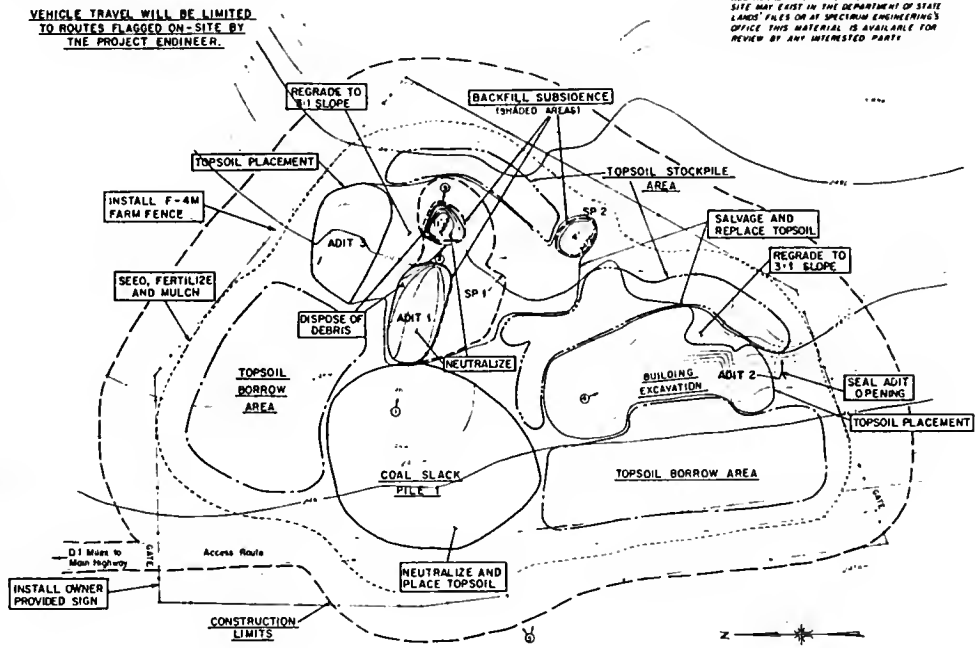
③ PICTURE 3 SHOWS THE HOLE BETWEEN SUBSIDENCE PIT 1 AND ADIT 1

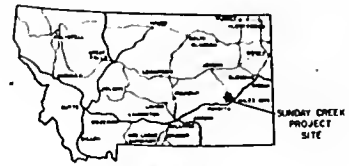
④ PICTURE 4 SHOWS THE BUILDING EXCAVATION AND FOUNDATION

⑤ PICTURE 5 SHOWS [illegible] SUBSIDENCE PIT 1 AND ADIT 1 IN THE BACKGROUND

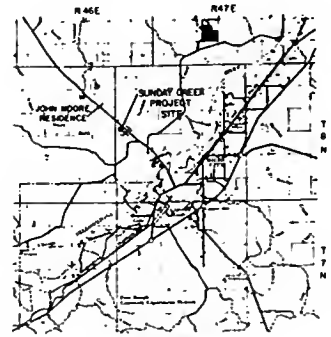
VEHICLE TRAVEL WILL BE LIMITED TO ROUTES FLAGGED ON-SITE BY THE PROJECT ENGINEER.

ADDITIONAL INFORMATION PERTAINING TO THIS SITE MAY EXIST IN THE DEPARTMENT OF STATE LANDS' FILES OR AT SPECTRUM ENGINEERING'S OFFICE. THIS MATERIAL IS AVAILABLE FOR REVIEW BY ANY INTERESTED PARTY.

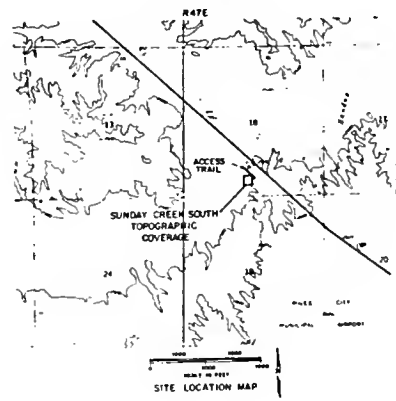




STATE LOCATION MAP



VICINITY ACCESS MAP



SITE LOCATION MAP

WORK DESCRIPTION

- STRIP AND STOCKPILE ALL TOPSOIL FROM WITHIN ADITS 1 AND 3, SUBSIDENCE PITS 1 AND 2, AND THE AREAS TO BE REGRADED
- REMOVE AND DISPOSE OF ALL DEBRIS LITTERING THE SITE
- PLACE THE MATERIAL FROM COAL SLACK PILE 1 INTO ADIT 1 AND THE DEEPEST SECTION OF SUBSIDENCE PIT 1
- SEAL AND BACKFILL ADIT 2
- REGRADE THE AREA IN AND AROUND THE BUILDING EXCAVATION AND THE AREA IN AND AROUND ADIT 1, ADIT 3 AND SUBSIDENCE PIT 1
- NEUTRALIZE THE COAL SLACK PILE 1 AREA, THE ADIT 1 AREA AND THAT PORTION OF SUBSIDENCE PIT 1 CONTAINING COAL SLACK
- REPLACE THE TOPSOIL FROM THE STOCKPILES AND PLACE TOPSOIL FROM THE BORROW AREAS TO COVER THE DESIGNATED AREAS
- PROVIDE WATER FOR USE IN COMPACTION AND FOR DUST SUPPRESSION IN THE CONSTRUCTION AREA AND ON THE HAUL ROADS
- SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS
- INSTALL F-4M FARM FENCE AS SHOWN
- ADDITIONAL WORK DESCRIPTION DETAILS CAN BE FOUND IN THE SPECIAL PROVISIONS.

WORK SUMMARY TABLE

ITEM	DESCRIPTION	ACTION	QUANTITY
ADIT 2	SMALL OPENING	SEAL	5 LCY
SUBSIDENCE PIT 3, ADIT DEPRESSION 1, ADIT DEPRESSION 3	SEE TOPOGRAPHIC MAP	REGRADE AND BACKFILL	40 LCY
SUBSIDENCE PIT 2	23 x 10 x 4'	BACKFILL	25 LCY
BUILDING EXCAVATION		REGRADE AND BACKFILL	45 LCY
COAL SLACK PILE 1		BURY IN SUBSIDENCE PIT 1	135 LCY
TOPSOIL		STRIP AND STOCKPILE PLACE FROM STOCKPILES AND TOPSOIL BORROW AREAS	255 LCY 265 LCY
NEUTRALIZE - 0.11 ACRES	COAL SLACK AREA 1	100 % CALCIUM CARBONATE APPLICATION (4.1 TONS/ACRE/6" SLICE)	900 LBS
DEBRIS	BIODEGRADABLE NON-BIODEGRADABLE	DISPOSE OF DISPOSE OF	5 PICKUP LOADS 4 RECYCLE LOADS
WATER	SUBSIDENCE AND REGRADE AREAS CONSTRUCTION AREA AND HAUL ROADS TOTAL	FOR COMPACTION DUST SUPPRESSION	3,500 GALLONS 2,000 GALLONS 5,400 GALLONS
FARM FENCE	TYPE F-4M SINGLE PANELS DOUBLE PANELS TYPE G-2 GATE	INSTALL AS SHOWN INSTALL 2 AS SHOWN	540 LF 2 EACH 8 EACH 32 LF

REVEGETATION OF ENTIRE DISTURBANCE AREA - 0.85 ACRES	SEED APPLICATION (23 LBS. PLS/ACRE) 15 LBS PLS	FERTILIZER APPLICATION (92.5 LBS. NUTRIENT/ACRE) 400 LBS	MULCH APPLICATION (1000 LBS/ACRE) (1000 LBS)

Vertical Datum Given On Interpolation Of USGS 7½' Quadrangle: Old Mill Topography Prepared From Ground Survey Conducted In 1987 By Spectrum Engineering Using A Prism Total And Airbeam. This Topography Is Of Reconnaissance Class And Has Not Been Field Checked

LEGEND

- CONTOUR
- COAL SLACK PILE
- DRAINAGE
- PICTURE NUMBER AND ORIENTATION
- SP 2 — SUBSIDENCE PIT (SP) NUMBER (& DEPTH)
- OPEN ADIT

LANDOWNER AND CONTACT

N½, W½SW¼, & SE¼ (less 47.33 acre tract)
SECTION 18, T8N, R47E

JOHN L. MOORE, ET AL
JORDAN STAGE
MILES CITY, MT 59301
PHONE (406) 232-5949

NOTICE

AN ABANDONED COAL MINE UNDERLIES THIS SITE. MANY POTENTIAL HAZARDS EXIST. THE EXTENT OF THESE HAZARDS IS NOT FULLY KNOWN. CONTRACTORS AND OTHER PERSONS WORKING AT THE SITE SHALL APPRISE THEMSELVES OF THE CONDITIONS AND TAKE WHATEVER STEPS ARE DEEMED NECESSARY TO INSURE SAFETY WHILE PERFORMING THEIR DUTIES.

SITE PLAN AND GENERAL LAYOUT

SUNDAY CREEK SOUTH SITE

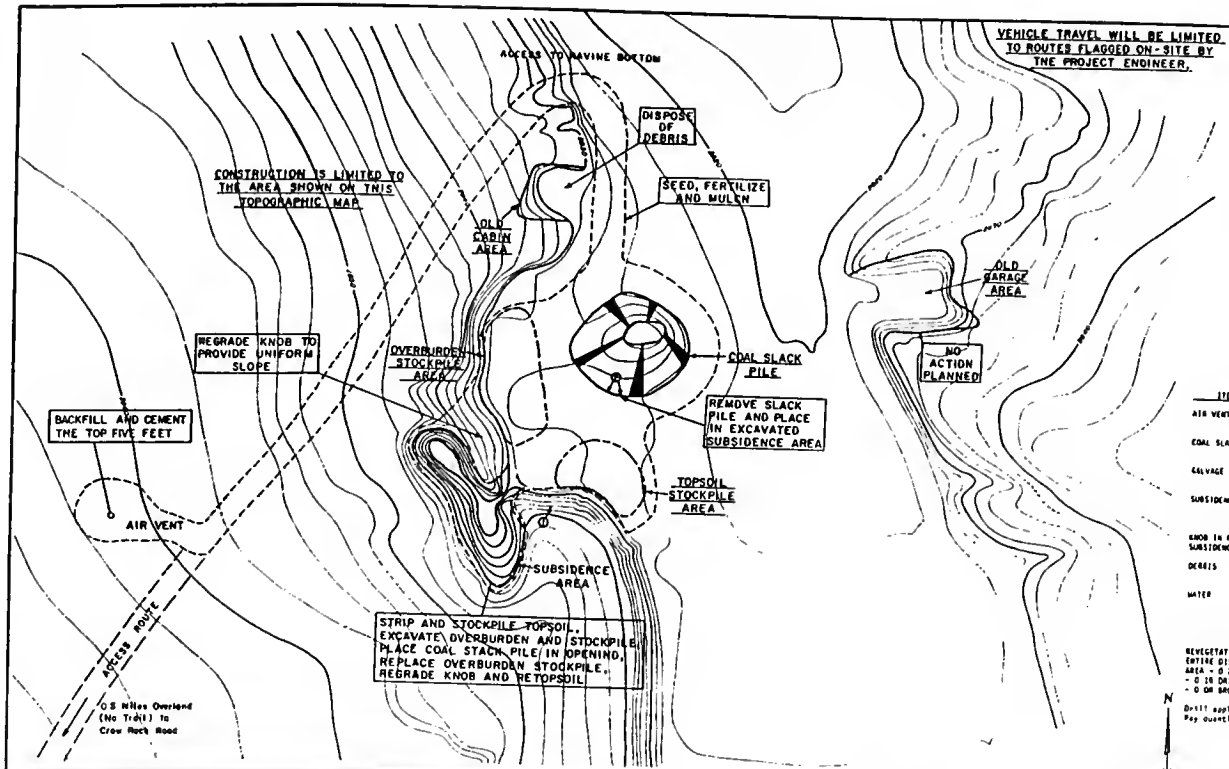
SECTION 18, T8N, R47E
CUSTER COUNTY, MONTANA

STATE OF MONTANA
DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION

DATE 12-28-87
DESIGN BY DLD
DRAWN BY
CHECKED BY
APPROVED BY
NO. DATE BY

SPECTRUM ENGINEERING
Mining and Civil Engineers
1520 Rimrock Ave. North
Billings, Montana

SHEET NO. 1 OF 1



VEHICLE TRAVEL WILL BE LIMITED TO ROUTES FLAGGED ON-SITE BY THE PROJECT ENGINEER.

WORK DESCRIPTION

- SALVAGE AND STOCKPILE TOPSOIL FROM THE SUBSIDENCE AREA
- EXCAVATE OVERBURDEN FROM SUBSIDENCE AREA AND STOCKPILE
- BACKFILL THE SUBSIDENCE AREA WITH THE COAL SLACK PILE, STOCKPILED OVERBURDEN, AND THE MATERIAL IN FRONT OF THE SUBSIDENCE AREA (KNOB) AND REGRADE THE BACKFILLED AREAS
- BACKFILL ONE (1) AIR VENT AND CEMENT THE TOP FIVE FEET
- PROVIDE WATER FOR BACKFILL COMPACTION AND HAUL ROAD DUST SUPPRESSION
- DISPOSE OF DEBRIS. THE DEBRIS AREA IS THE SITE OF A SNAKE DEN
- REPLACE THE TOPSOIL, AND REVEGETATE THE DISTURBED AREAS INCLUDING THE HAUL ROADS.
- ADDITIONAL WORK DESCRIPTION DETAILS CAN BE FOUND IN THE SPECIAL PROVISIONS

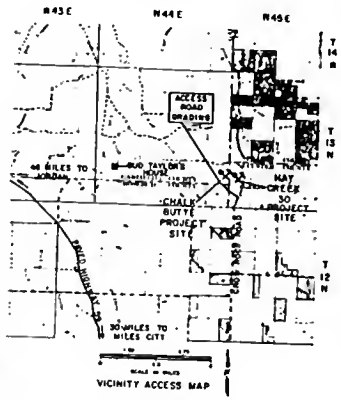
WORK SUMMARY TABLE

ITEM	DESCRIPTION	ACTION	QUANTITY
AIR VENT	6" DIAMETER x 20' DEEP	BACKFILL AND CEMENT THE TOP FIVE FEET	1 LCY
COAL SLACK PILE	35' DIAMETER x 7' HIGH	DIRECT PLACE IN SUBSIDENCE AREA	160 LCY
SALVAGE TOPSOIL	FROM SUBSIDENCE AREA - 60' x 20' x 1' DEEP	STOCKPILE IN FRONT OF SUBSIDENCE AREA	50 LCY
SUBSIDENCE AREA	STRIP OVERBURDEN AND STOCKPILE IN FRONT OF SUBSIDENCE AREA	EXCAVATION - 60' x 20' x 2' DEEP	100 LCY
KNOB IN FRONT OF SUBSIDENCE AREA	USE AS NECESSARY TO BLEND WITH EXIS"ING TOPOGRAPHY	REGRADE OVER SUBSIDENCE AREA	100 LCY
DEBRIS	BIODEGRADABLE - WOOD	DISPOSE OF DEBRIS	1 PICKUP LOAD
	NON-BIODEGRADABLE - METAL	DISPOSE OF DEBRIS	1 PICKUP LOAD
WATER	AIR VENT	FOR COMPACTION AND SUBSIDENCE INDUCTION	200 GALLONS
	SUBSIDENCE AREA	FOR COMPACTION	4000 GALLONS
	HAUL ROADS	DUST SUPPRESSION	5000 GALLONS
	TOTAL		9200 GALLONS

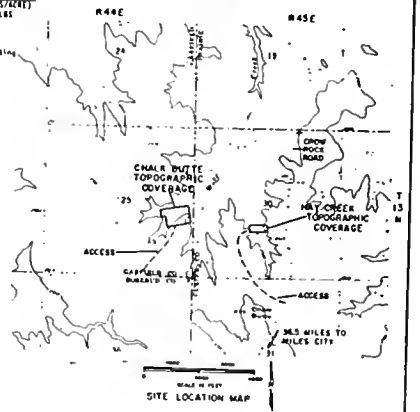
REVEGETATION OF ENTIRE DISTURBANCE AREA - 0.24 ACRES	SEED APPLICATION (23 LBS PLS/ACRE)	FERTILIZER APPLICATION (92.5 LBS NUTRIENT/ACRE)	MULCH APPLICATION (3000 LBS/ACRE)
- 0 IN DRILLED	4.2 LBS PLS	23 LBS	720 LBS
- 0 OR BROADCAST	3.4 + 2 LBS PLS *		

* Drill application of 1.4 pounds of pure live seed is doubled for broadcast seeding. Pay quantity is at the drill application rate of 1.4 pounds

STATE LOCATION MAP



VICINITY ACCESS MAP



SITE LOCATION MAP

① PICTURE 1 SHOWS THE COAL SLACK PILE.

LEGEND

—5850— CONTOUR
COAL SLACK
PICTURE NUMBER AND ORIENTATION
SP1 SUBSIDENCE PIT (SP#) NUMBER (& DEPTH)

Vertical Datum Based On Interpretation Of USGS 7½ Quadrangle: CROW ROCK SE. Topography Prepared From Ground Survey Conducted in 1987 By Spectrum Engineering Using A Prome Tape And Airdata Tilt Topography Is Of Reconnaissance Class And Has The Seal Fake Channel

② PICTURE 2 SHOWS THE SUBSIDENCE AREA AND VALLEY SLOPES

③ PICTURE 3 IS AN AERIAL SHOWING THE RECLAMATION AREA

LANDOWNER
W½ SECTION 30

JAMES TAYLOR
BOX 191
MILES CITY, MT 59301
PHONE (406) 232-7641

LESSEE
BUD TAYLOR (BROTHER)
LIVES 4 MILES FROM SITE
(SEE VICINITY ACCESS MAP)
PHONE (406) 354-6551

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SITE PLAN AND GENERAL LAYOUT

HAY CREEK 30
SECTION 30, T13N, R45E
CUSTER COUNTY, MONTANA

STATE OF MONTANA
DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION

DATE 12 28 87
DRAWN BY CT
CHECKED BY
APPROVED BY

SPECTRUM ENGINEERING
Mining and Civil Engineers
BILLINGS, MONTANA

SHEET NO 1 OF 1

VEHICLE TRAVEL WILL BE LIMITED TO ROUTES FLAGGED ON SITE BY THE PROJECT ENGINEER.

NO ACTION

COAL SLACK

SUBSIDENCE BACKFILL

SALVAGE AND REPLACE TOPSOIL

SP1

BACKFILL AND REPLACE STOCKPILED TOPSOIL

TOPSOIL STOCKPILE AREA

BORROW 2.5 FEET OF MATERIAL

EXCAVATE INTERMITTENT CRACK LINE

INTERMITTENT CRACKS AND SINKHOLES

BORROW AREA

BH 3

REGRADE

SALVAGE TOPSOIL 1 FOOT EITHER SIDE OF CRACKS AND WITHIN AND STOCKPILE ADJACENT TO CRACKS

BH 1

COAL FIRE CRACKS

CONSTRUCTION LIMITS

SEED, FERTILIZE AND MULCH

BACKFILL TEMPERATURE PROBE BORENOLES

BACKFILL AND REPLACE STOCKPILED TOPSOIL

ACCESS TRAIL

BH 2

0.4 Miles to County Road

NUMEROUS SMALL SINKHOLES (1-3 Ft Deep, 1-3 Ft Diameter)

① PICTURE 1 SHOWS A TYPICAL VIEW OF THE CRACKING

② PICTURE 2 IS A VIEW LOOKING INTO ONE OF THE CRACKS

③ PICTURE 3 SHOWS THE SUBSIDENCE PIT

④ PICTURE 4 IS AN AERIAL VIEW OF THE COAL FIRE CRACKING

LANDOWNER
SECTION 25

JAMES TAYLOR
BOX 191
MILES CITY, MT 59301
PHONE (406) 232-7641

LESSEE
BUD TAYLOR (BROTHER)
LIVES 4 MILES FROM SITE
(SEE VICINITY ACCESS MAP)
PHONE (406) 354-6551

WORK DESCRIPTION

- GRADE UP TO 1 MILE OF COUNTY ROAD, AS NECESSARY, TO IMPROVE THE ACCESS (SEE VICINITY ACCESS MAP)
- SALVAGE AND STOCKPILE TOPSOIL FROM THE COAL FIRE CRACKS, SINK HOLES, SUBSIDENCE PIT AND BORROW AREA
- BACKFILL THE COAL FIRE CRACKS, SINK HOLES AND SUBSIDENCE PIT #1 WITH MATERIAL FROM THE BORROW AREA (ABOUT 2.5 FEET OF BORROW DEPTH).
- BACKFILL THREE (3) TEMPERATURE PROBE BORENOLES ACCORDING TO THE DETAIL DRAWING AND TECHNICAL SPECIFICATIONS
- PROVIDE WATER FOR BACKFILL COMPACTION AND HAUL ROAD DUST SUPPRESSION
- REGRADE THE BORROW AND BACKFILL AREAS.
- REPLACE THE TOPSOIL, AND REVEGETATE THE DISTURBED AREAS INCLUDING THE HAUL ROADS.
- NO DEBRIS DISPOSAL IS NECESSARY
- ADDITIONAL WORK DESCRIPTION DETAILS CAN BE FOUND IN THE SPECIAL PROVISIONS

WORK SUMMARY TABLE

ITEM	DESCRIPTION	ACTION	QUANTITY
COUNTY ROAD	ACCESS TO SITE	GRADE TO IMPROVE ACCESS	1 MILE
SALVAGE TOPSOIL	FROM CRACKS & BORROW AREA	STOCKPILE ALONG SALVAGE AREA	75 LCY
COAL FIRE CRACKS AND SINK HOLES	1055' LONG x 1 TO 6' WIDE x 1.5 TO 5' DEEP	BACKFILL WITH MATERIAL FROM BORROW AREA	950 LCY
SUBSIDENCE PIT #1	6' x 6' x 0.5' DEEP	BACKFILL WITH MATERIAL FROM BORROW AREA	5 LCY
BORROW AREA	OVERBURDEN BORROW SOURCE TO FILL CRACKS	EXCAVATION 2.5' DEEP	375 LCY
TEMPERATURE PROBE BOREHOLES	3 BOREHOLES (40', 10' AND 27' DEEP)	BACKFILL & RECLAIM PER THE TECHNICAL SPECS	5 HOLES
DEBRIS			NONE
WATER	CRACKS & SUBSIDENCE PIT HAUL ROADS TOTAL	FOR COMPACTION DUST SUPPRESSION	5000 GALLONS 3000 GALLONS 8000 GALLONS
REVEGETATION OF ENTIRE DISTURBANCE AREA 1.2 ACRES	SEED APPLICATION (23 LBS PLS/ACRE) 28 LBS PLS	FERTILIZER APPLICATION (92 5 LBS NUTRIENT/ACRE) 111 LBS	MULCH APPLICATION (1000 LBS/ACRE) 1600 LBS

LEGEND

- 7900 — CONTOUR
- COAL SLACK
- DRAINAGE
- BH1 BOREHOLE NUMBER
- PICTURE NUMBER AND ORIENTATION
- SP1 SUBSIDENCE PIT (SP) NUMBER (& DEPTH)
- 4 CRACK DEPTH

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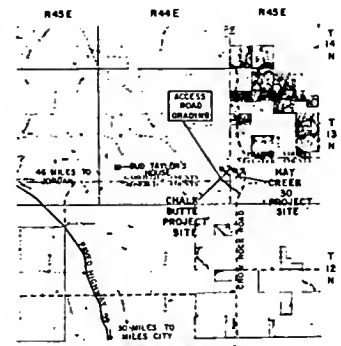
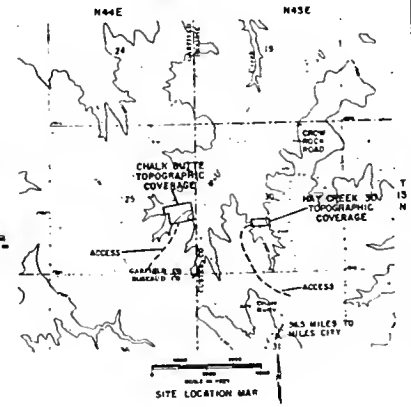
STATE LOCATION MAP



VICINITY ACCESS MAP



SITE LOCATION MAP

SITE PLAN AND GENERAL LAYOUT

CHALK BUTTE SITE
SECTION 25, T13N, R44E
GARFIELD COUNTY, MONTANA

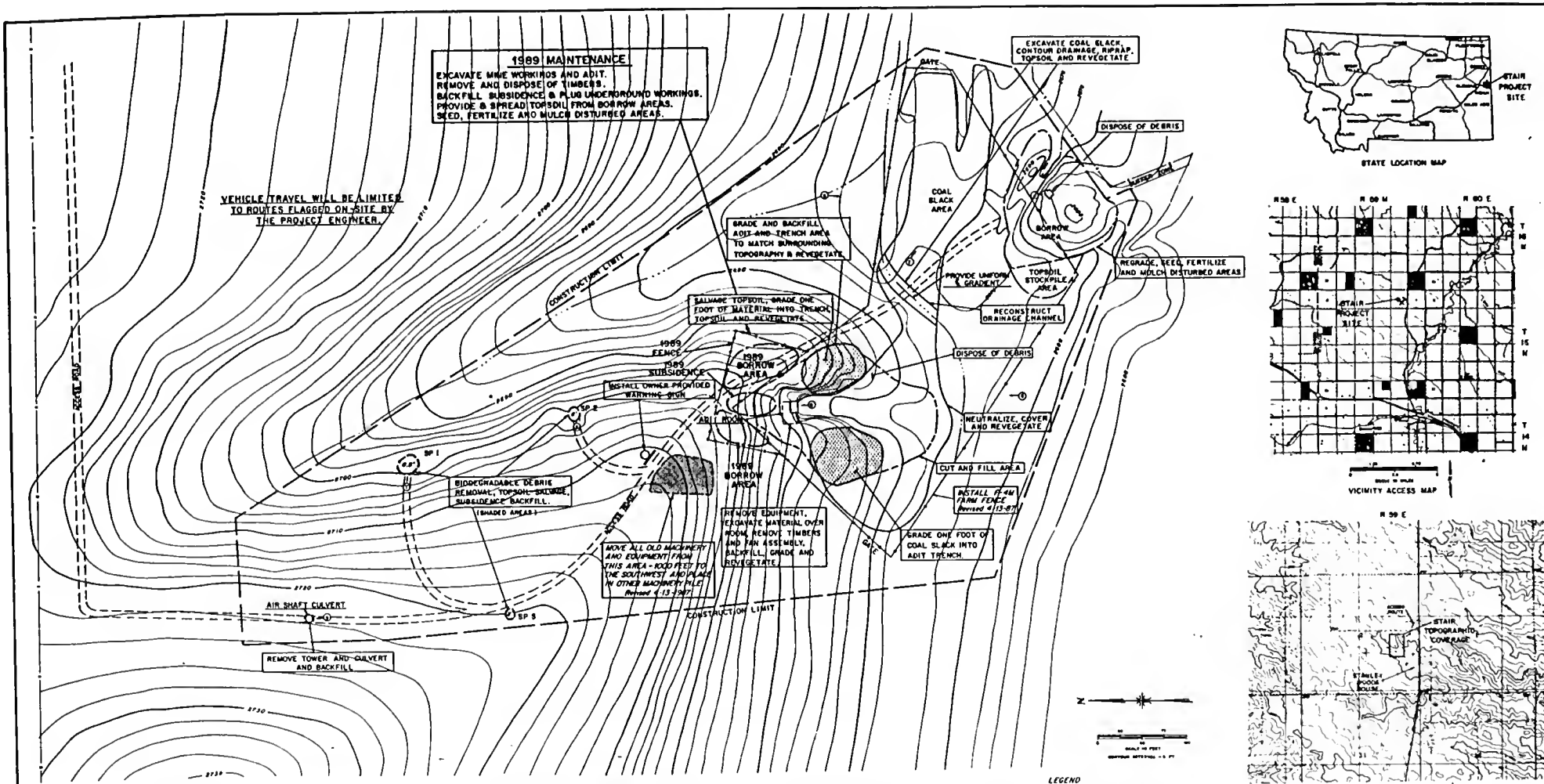
STATE OF MONTANA
DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION

DATE 12-20-87
DRAWN BY CT
CHECKED BY
APPROVED BY

NO.	REVISIONS	DATE	BY

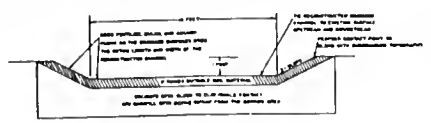
SPECTRUM ENGINEERING
Mining and Civil Engineers
1300 6th AVE NORTH
BILLINGS, MONTANA

SHEET NO 1 of 1



WORK DESCRIPTION

REMOVE AND DISPOSE OF CIVIL DEFENSE EQUIPMENT FROM ADIT. DEMOLISH FAN ASSEMBLY AND ADIT FRAMEWORK. EXCAVATE AND SEAL ADIT WITH COAL SLACK AND SPOIL. BACKFILL THREE SUBSIDENCE PITS EXCAVATE AND REMOVE TOP FIVE FEET OF AIR SHAFT CULVERT AND BACKFILL AIR SHAFT NEUTRALIZE COAL SLACK AREAS AND BURY ON-SITE WITH BORROW MATERIAL REGRADE THE BORROW AREA TO PROVIDE UNIFORM SLOPES AND SMOOTH TRANSITIONS WITH EXISTING CONTOURS ALL DEBRIS SHALL BE REMOVED. ALL DISTURBED AREAS WILL BE SEEDED, FERTILIZED AND MULCHED. ADDITIONAL WORK DESCRIPTION DETAIL CAN BE FOUND IN THE SPECIAL PROVISIONS. FENCE THE REVEGETATED AREA AS SHOWN



RECONSTRUCTED DRAINAGE CHANNEL DETAIL
NO SCALE

DESCRIPTION OF DISTURBANCE AREAS

ITEM	DIMENSIONS (FEET)	DEPTH (FEET)	ESTIMATED VOLUMES (CUBIC YARDS)
SP 1	23 x 24	2.5*	27
SP 2	16 x 17	6	32
SP 3	8 x 6	2	1
AIR SHAFT	3 (DIAMETER)	45	13
EXCAVATE AND BACKFILL ADIT	–	–	1229
COAL SLACK AREA	1.1 ACRES		
BORROW AREA	0.3 ACRES		
REVEGETATION	1.6 ACRES		
FARM FENCE			
Type F-4M	1260 LINEAR FEET		
Single Panel	2 EACH		
Double Panel	6 EACH		
Gate - Type G-2	32 LINEAR FEET		

*CURRENT DEPTH PRIOR TO DEBRIS REMOVAL

Vertical Datum Based On Interpolation To USGS 7½' Quadrangle - BIG SAM BRIDGE SW, MT Topography. Prepared From Ground Survey Conducted August 87, 1988 By Spectrum Engineering using 4 Plane Table And Alidade. Base Topography In Of Recommendations Close And Are Our Base Field Checked

LANDOWNER - SECTION 2

STANLEY AND DORIS WOODS
WIBAUX, MT 59353
PHONE (406) 795-2383

NOTICE

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MONTANA REGISTERED PROFESSIONAL ENGINEER
WILLIAM C. MAHON
5278

SITE PLAN AND GENERAL LAYOUT

STAIR SITE

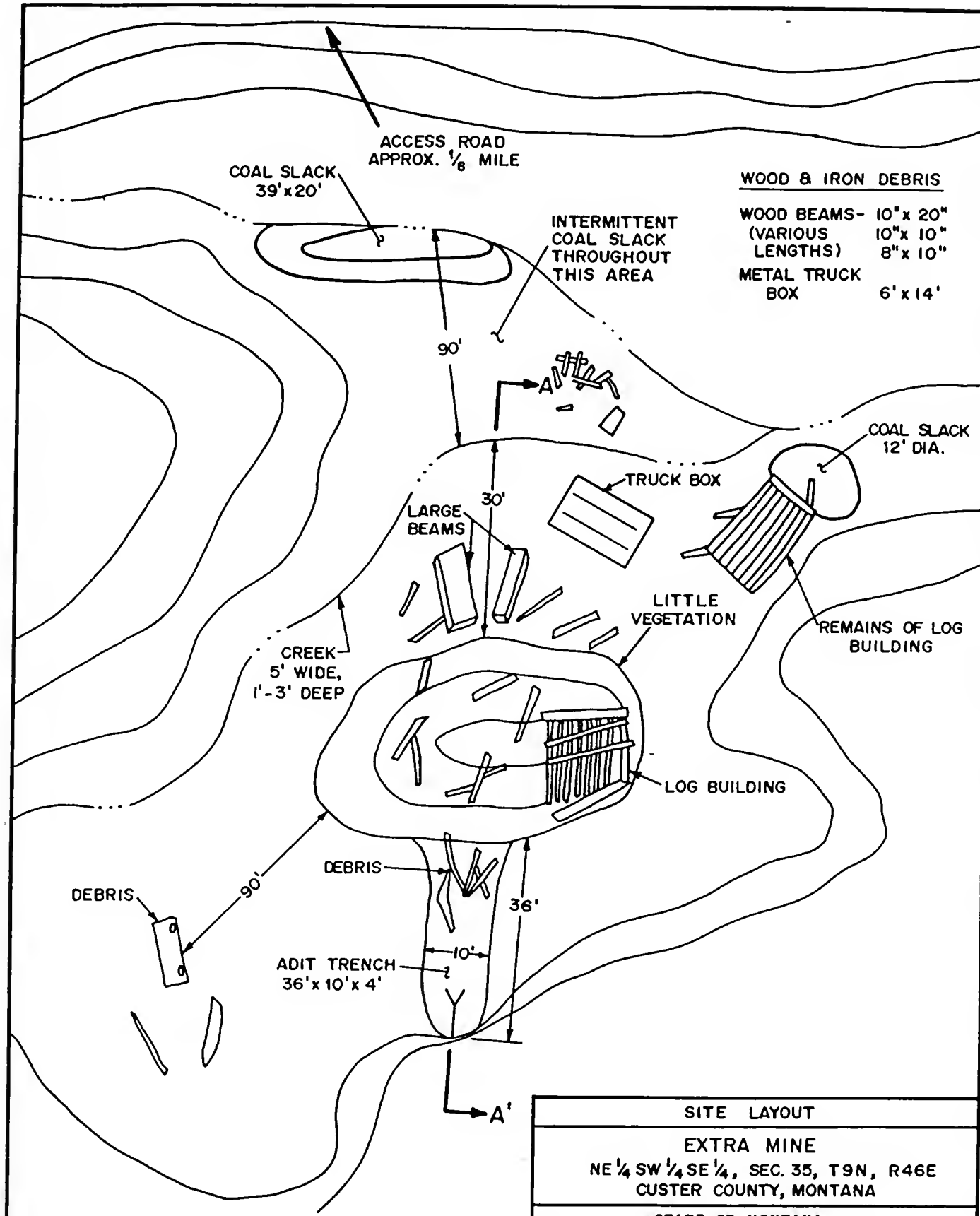
SECTION 2, T15N, R59E
WIBAUX COUNTY, MONTANA

STATE OF MONTANA
DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION

DATE	12-19-86	
DRAWN BY	SAH	
DESIGNED BY	DLG	
CONSIDERED BY		
NO.	DATE	BY
1	3-2-87	DLG
2	4-13-87	DLG
3	6-24-88	DLG

SPECTRUM ENGINEERING
Mining and Civil Engineers
BOX 615 BOX 4007TH
BILLINGS, MONTANA

SHEET NO. 1 of 1



SITE LAYOUT

EXTRA MINE

NE 1/4 SW 1/4 SE 1/4, SEC. 35, T9N, R46E

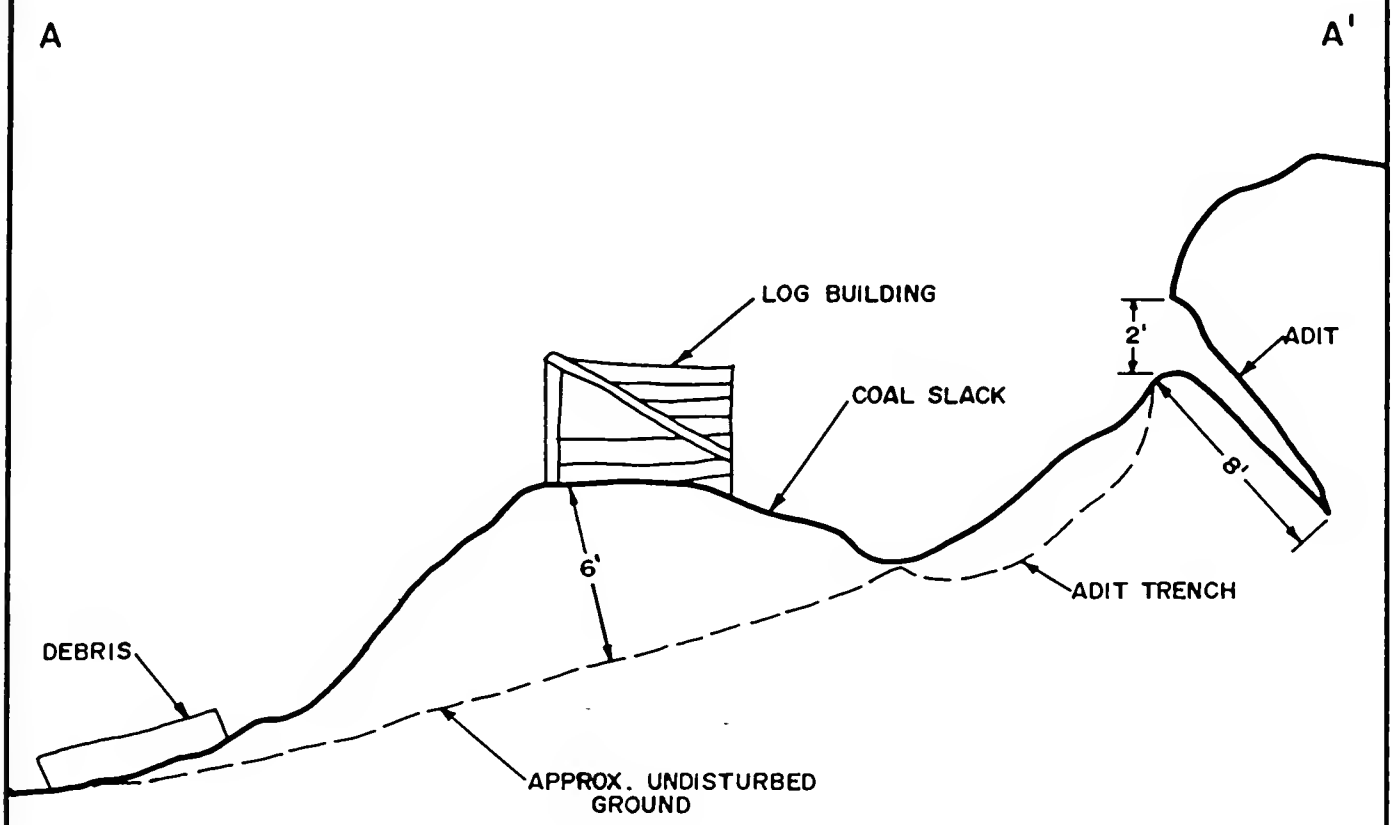
CUSTER COUNTY, MONTANA

STATE OF MONTANA

DEPARTMENT OF STATE LANDS

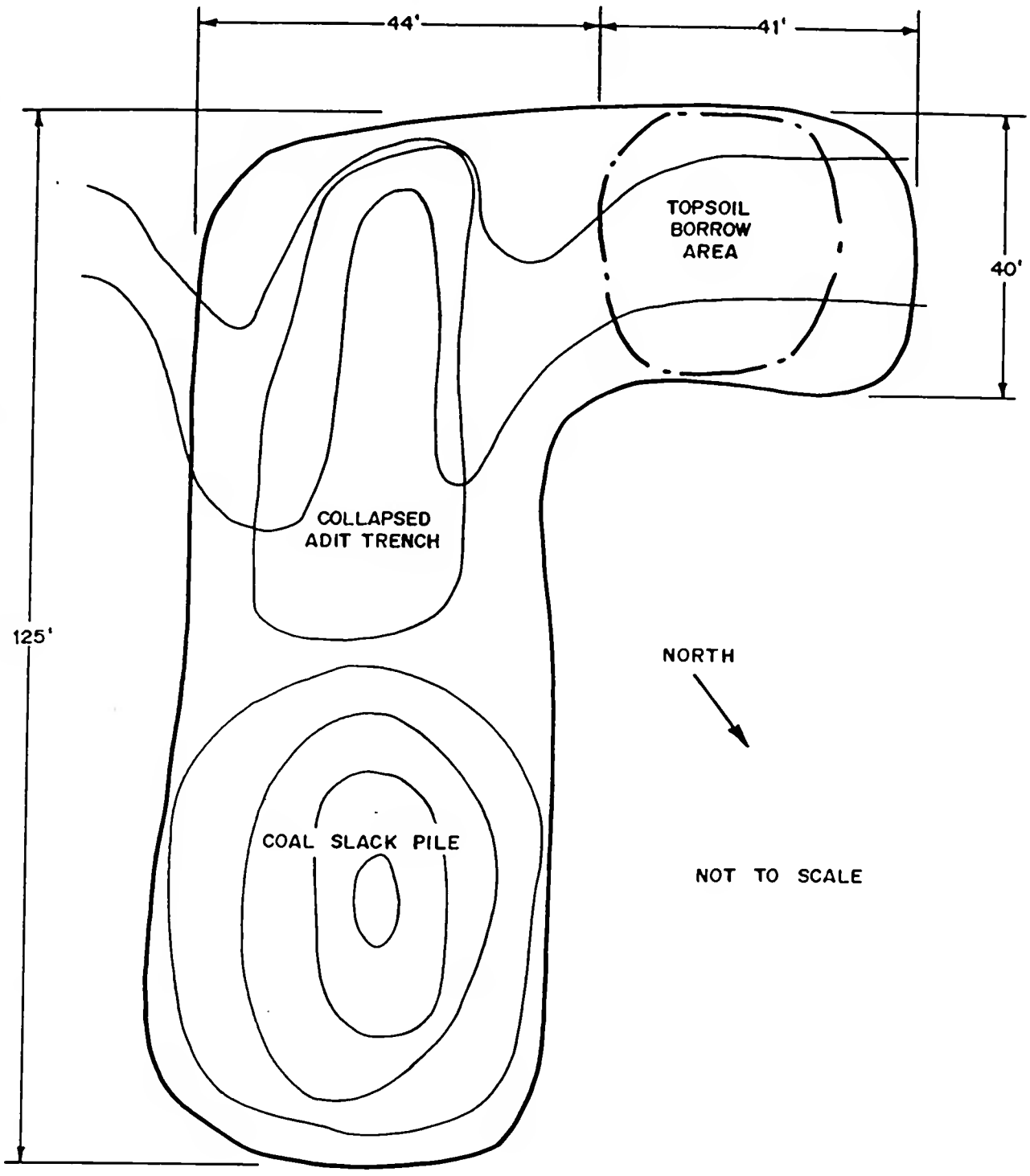
Date: 9-26-89	SPECTRUM ENGINEERING
Drawn by: DLO	Mining and Civil Engineers
Checked by: GWR	3302 4th AVE NORTH
Revisions	BILLINGS, MONTANA

CROSS SECTION A - A'



NOT TO SCALE

CROSS SECTION A-A'	
EXTRA MINE NE¼ SW¼ SE¼, SEC. 35, T9N, R46E CUSTER COUNTY, MONTANA	
STATE OF MONTANA DEPARTMENT OF STATE LANDS	
Date: 9-26-89 Drawn by: DLO Checked by: GWR Revisions	SPECTRUM ENGINEERING Mining and Civil Engineers 3302 4th AVE NORTH BILLINGS, MONTANA



x x

STATE HIGHWAY 59

← To Miles City

To Jordan →

SITE LAYOUT

COAL SLACK PILE
SE¼ NE¼, SEC. 13, T 8N, R46E
CUSTER COUNTY, MONTANA

STATE OF MONTANA
DEPARTMENT OF STATE LANDS

Date: 9-26-89	SPECTRUM ENGINEERING
Drawn by: DLO	Mining and Civil Engineers
Checked by: GWR	3302 4th AVE NORTH
Revisions	BILLINGS, MONTANA

C. Chronological History

1. The projects were advertized for the three consecutive weeks of October 5th, 12th and 19th, 1988 in the Billings Gazette in Billings, Independent Record in Helena, and the Miles City Star in Miles City.

2. The pre-bid conference was held at 10 a.m. on Thursday, October 13th, 1988. The meeting started at the Municipal Airport parking area in Miles City. All project sites were visited by the contractors accompanied by Ed Gensler from the AMR Bureau and Gary Rome from Spectrum Engineering.

3. Bids were opened at 2 p.m. on October 25th, 1988. The bid tabulation and engineer's estimate are presented in Appendix D at the back of this report.

4. The Notice of Award was issued on October 31st, 1988 to the lowest bidder in the amount of $38,780.39. The Agreement was signed and the Contract was awarded on December 8th, 1988 to:

   Mitchell Brothers Inc.
   P.O. Box 736
   Glendive, Montana 59330
   Phone: 406/365-4576
   MT Contractor's License: 2866 A

5. The STAIR MAINTENANCE work was change-ordered into this project. STAIR (86-46-129) was initially completed in November of 1987. Additional subsidence had occurred, exposing the underground mine workings.

6. The pre-construction meeting was held on April 24th, 1989. George and Terry Mitchell represented Mitchell Brothers. Gary Rome (project engineer) and Bill Wolff (construction inspector) were in attendance from Spectrum Engineering. Terry Mitchell will be the contractor's superintendent. Work began after the meeting.

7. The sixty day contract time started April 24th, 1989 per the Notice To Proceed.

8. All of the earthwork and revegetation was completed by June 16, 1989. Since the spring of 1989 had been wet, the engineers and AMRB personnel decided to extend the spring planting date.

9. The Contractor used 52 days of the 60 day contract.

10. Final inspection of the Sunday Creek sites took place on May 23rd with Ed Gensler from the AMR Bureau and Gary Rome from Spectrum Engineering. On June 20th the remaining sites (Chalk Butte, Hay Creek 30 and the two small sites near Sunday Creek were inspected by Ed Gensler and Bill Maehl from Spectrum.

D. Equipment

The equipment list following is taken from the bid information turned in by the contractor, and from the Daily Construction Inspector Reports.

1. Terex TS-14 Scraper, 14 cubic yards (struck)
2. Michigan-Clark 110-11B Paddle Wheel Scraper - 11 cubic yards (struck)
3. Caterpillar D-7F Crawler Dozer, 180 horsepower
4. Caterpillar D-8 Crawler Dozer
5. Case 580E combination backhoe and front end loader
6. John Deere 690 Backhoe, 1 cubic yard
7. Bobcat Loader with Posthole Auger
8. International tandem dump truck with 4,000 gallon tank (for water)
9. Dodge single-axle dump truck
10. John Deere G Farm Tractor
11. Finn aero-mulcher mounted on a Chevy C-65 two-ton flatbed truck

E. Daily Construction Log

Terry Mitchell served as the Contractor's on-site superintendent. Bill Wolff served as Spectrum's construction inspector. The construction of the project was completed as follows:

SUNDAY CREEK

Apr. 24, 1989 - Held pre-construction meeting on site. The Sunday Creek Sites were discussed in detail, since they would be done first. The Landowner was present to discuss locations for topsoil borrowing. The Hay Creek 30 and Chalk Butte sites were discussed briefly. The Contractor started debris cleanup at the Sunday Creek East site.

Apr. 25, 1989 - Continued working at the Sunday Creek East site. Most of the debris was cleaned up by noon. Fire was used as the means of disposal. A copy of the burn permit issued by Custer County is included with the Daily Construction Inspector Report field notes. Mobilized the 110-11b scraper and started stripping topsoil from the subsidence pits, excavated area, and the borrow area. Started hauling borrow to the subsidence pits. Started rebuilding the slope at the excavated area on 3H:1V.

Started work at the Sunday Creek West site. Hauled debris to the debris fire. Prepared the subsidence holes and collapsed adit with the backhoe. Moved the scraper in to strip topsoil.

Started work at the Sunday Creek South site. Started hauling debris to the fire. Stripped topsoil from the building #1 area and hauled borrow material to fill it.

E. Daily Construction Log (Cont.)

Apr. 26, 1989 - Short day due to rain previous evening. Inspector staked subsidence pits, borrow areas, coal slack for measurement at Sunday Creek East. Otherwise too wet to work.

May 1, 1989 - Too wet to work in the morning. Afternoon was okay. Worked at the Sunday Creek South site. Backhoe removed topsoil from the adits, subsidence pits, and the building excavation. Hauled coal slack to backfill adit 1 and sp 1.

May 2, 1989 - Sunday Creek East. Started fencing on the east side of the road. Hauled borrow to building #2 area. Staked and measured areas for lime and revegetation: sp 5, adit 1 and coal slack area.

Sunday Creek West. Used the scraper to haul borrow material from West borrow area to building #2 site at the East site. Stripped topsoil from the excavated area with the backhoe. All topsoil stripping at the West site was completed.

Sunday Creek South. Dressing the building excavation area. Started staking out the disturbed areas for measurement. Laid out approximate fence corners. Staked all areas for lime and revegetation.

May 3, 1989 - Sunday Creek East. Mobilized a D-7, crimper, disk and mulch spreader. Continued fencing. All panels were set and brace wires installed.

May 4, 1989 - Sunday Creek North. Moved Case 580E backhoe to the North sites to begin removing topsoil. Moved the D-8 here to start regrading areas. D-8 broke down at 4:00 pm.

Sunday Creek East. Hauled borrow and finished up sp-5, building #1 and minor disturbances. Resumed fencing on the east side of the road. Ed Gensler of the AMRB visited the sites. It was agreed to connect fence between the East and West sites. Also, Ed said it would be all right to extend the seeding deadline as long as the moisture continued as good as it had been.

Sunday Creek West. Mobilized D-8 crawler dozer. Moved borrow material to all subsidence pits and excavated areas. Spread topsoil over all disturbed areas.

Sunday Creek South. Dug fence corners and set all the single and double panels.

E. Daily Construction Log (Cont.)

May 5, 1989 - Sunday Creek North. Backhoe continued to remove topsoil from subsidence areas. Hauling borrow material to subsidence areas and to adit #4.

Sunday Creek East. Moved Bobcat to this site to dig post holes.

Sunday Creek South. Continued fencing. Placed 3 deadmen (buried rocks) in the fence line. Fencing complete here except for gates and closures. Contractor brought in bagged lime.

May 8, 1989 - Sunday Creek East. Completed spreading lime on the East coal slack pile. Finished hauling and spreading topsoil. Started disking fertilizer. Fertilizer tags and certification are with the Daily Construction Inspector Report for this date. All specs were okay. Continued fencing.

May 9, 1989 - Sunday Creek East. Continued fencing on the west side of the road. Seeded west side of the road (East sites.)

Sunday Creek West. Seeded and mulched. Seed tags and certification are with the Daily Construction Inspector Report for this date. Specs and field-determined application rates were acceptable.

Sunday Creek South. Spread lime on coal slack. Spread topsoil on all disturbed areas. Seeded and mulched the whole site.

The landowner (John Moore) stopped by to give directions to a coal seam fire. The inspector spent some time looking for the coal seam fire without success. He did find two abandoned coal mines and sketched maps. These maps accompany the Daily Construction Inspector Reports for this date.

May 10, 1989 - Sunday Creek North. The Contractor removed topsoil from the last two subsidence pits. Built a small earth dam around adit #2 to facilitate flow of soil cement. Removed topsoil from Adit #6 area. Hauled borrow to sp 2. Removed metal debris by burying it in sp 5. Used D-8 crawler dozer to dress sp 1, 3, and 4. Filled sp 5 with borrow material. Spread topsoil on sp 5 and borrow area. Ordered 3 cubic yards of 3-sack concrete and poured at 4:00 pm. After pouring 2 yards, the hole seemed to block up. Added the last yard. Then the Contractor pushed dirt against the concrete to force the top of the concrete higher.

E. Daily Construction Log (Cont.)

than the pre-existing opening. The D-7 crawler dozer was used to form a channel next to Adit #2.

Sunday Creek East. Seeding, mulching, and crimping.

May 11, 1989 - Sunday Creek North. Continued digging new channel adjacent to Adit #2. Started fencing and liming. Spread fertilizer and seeded areas 1,2, and 3.

May 15, 1989 - Continued fencing.

May 18, 1989 - Continued fencing.

May 22, 1989 - Finished fencing.

CHALK BUTTE

May 15, 1989 - Contractor moved Case 580 backhoe to Chalk Butte site. Removed topsoil from the cracks, starting at the west end. Mobilized the 110-11B scraper to Chalk Butte for topsoil and borrow work. Pulled PVC pipe from the boreholes and removed the steel fence posts.

May 16, 1989 - Contractor removed topsoil and investigated the fire-caused cracks. Hauled borrow material to fill the cracks. Spread topsoil over the whole project site. Spread fertilizer.

May 17, 1989 - Finished spreading and disking fertilizer. Seeded, mulched, and crimped. Chalk Butte project work completed.

HAY CREEK 30

May 15, 1989 - Inspector took pre-construction photos of the area. Used the backhoe to make a catch basin around the air vent. Poured water into the air vent for about one minute, filling it full. Using D-7 crawler dozer, the Contractor removed topsoil and borrow material from the subsidence. Coal slack was placed in the subsidence, and the area was dressed up.

May 16, 1989 - Contractor spread borrow material and topsoil over coal slack in the subsidence hole. Water in the air vent is down approximately 1.5 feet from its highest point. The Contractor spread fertilizer and disked the site. Seeded the site (the slope was broadcast seeded), mulched, and crimped the area. Tried to measure the depth of the air vent, but it seems to angle off to one side.

E. Daily Construction Log (Cont.)

May 17, 1989 - Cemented approximately top 4 to 5 feet of the air vent. Seeded, fertilized, and mulched over the air vent. Hay Creek 30 project work complete.

STAIR MAINTENANCE

May 24, 1989 - Mobilized to site. Excavated tunnel subsidence and pulled out the wood debris. Opened the subsidence into a small room. Started backfilling. The landowner (Mr. Woods) visited the site to discuss the project. Found a topsoil borrow area.

May 25, 1989 - Finished backfilling subsidence. Regraded and dressed the slope to prepare for revegetating.

June 13, 1989 - Measured fence. Inspected seeding, and mulching. Contractor re-installed sign according to specs.

COAL SLACK PILE

June 14, 1989 - Mobilized to the site in the afternoon. Removed topsoil from the collapsed adit trench and surrounding area. Moved coal slack into the subsidence. Spread lime and disked it in. Spread topsoil (large pieces of sagebrush were hand picked out). Spread and disked fertilizer. Seeded and Mulched. This job completed.

EXTRA MINE

June 12, 1989 - Provided access to the site by placing a temporary earth plug in the natural drainage channel. The landowner (John Moore) visited the site. Dug a burn pit and started a fire. Started picking up debris. D-7 moved coal slack and regraded it into the base of the hill. Put out the fire and buried the pit with the D-7.

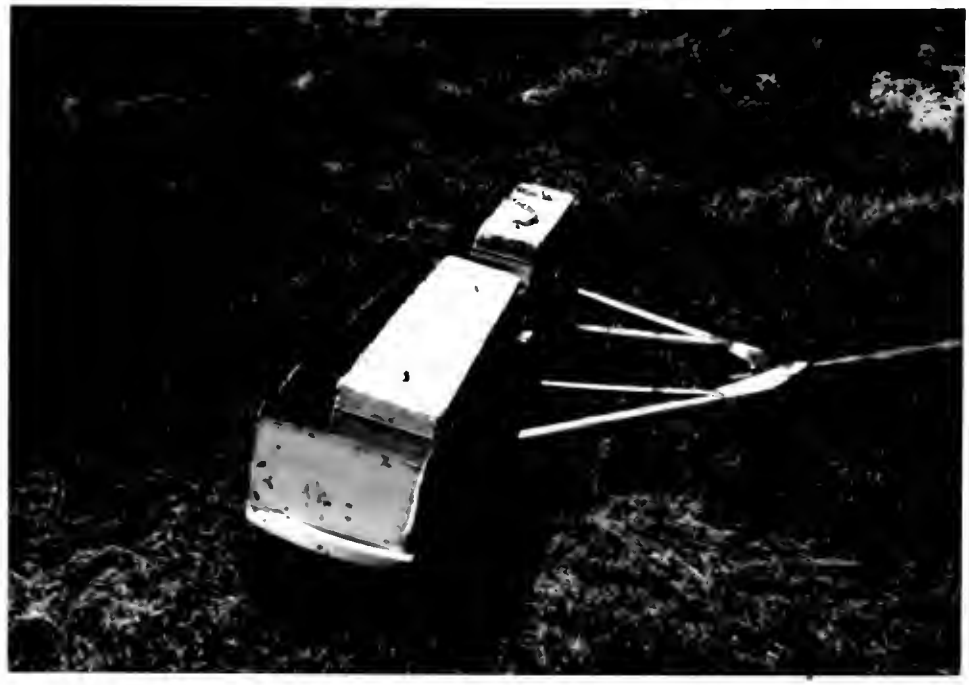
June 14, 1989 - Contractor arrived at the site with lime. This batch is 96% pure. Lime tags and documentation follow the Daily Construction Inspector Reports for the last day of construction. Spread lime and disked the coal slack areas. Spread topsoil over the disturbance. Spread fertilizer and disked the site. Broadcast seeded the area. Mulched and crimped. One thousand pounds of cement were used to weight the crimper. Contractor mobilized to the next site.

III. SLIDES

The description of the slides taken to document the work performed at each of the sites is found in Appendix A. In addition, the original slides are found at the very back of one volume and black and white copies of the slides are found in all three volumes directly behind the slide descriptions in Appendix A.

Two prints showing views of the reclamation work are found on the following page.

Soil Cement Was Used to Seal Adit #2 at Sunday Creek North. This Photo Shows How a Small Dam Was Used to Contain the Cement and How the Material was Introduced Into the Hole.



Crimped Grass Hay Mulch Was Used for These Projects. This Photo Shows the Crimper With Two 425-Pound Weights. The Objective is to Obtain a Crimping Depth of at Least Three Inches.

IV. COST SUMMARY

A. Final Payment Request and Reconciliation Change Order

The following reconciliatory change order was executed at the end of the project. The change order accounts for the work performed under the original contract, as well as the work done at each of the three additional project sites.

Change Order No. 1 - Issued June 22, 1989

A copy of the Final Payment Request (Payment Request No. 1) and Change Order No. 1 are included in Appendix B of this report. These documents summarize the final quantities and costs for each item payable under the Original Contract, Stair Maintenance, the Extra Mine, and the Coal Slack Pile.

B. Cost Per Site

1. Project Cost Summary

Site	Disturbed Acres	Cost/Acre	Total Project Cost
SUNDAY CREEK	3.23	$ 8,691.27	$ 28,072.79
HAY CREEK 30	0.29	9,410.14	2,728.94
CHALK BUTTE	1.16	6,137.74	7,119.78
STAIR MAINTENANCE	0.14	33,580.43	4,701.26
COAL SLACK PILE	0.17	6,230.29	1,059.15
EXTRA MINE	0.37	15,380.54	5,690.80
TOTAL	5.36	$ 9,211.33	$ 49,372.72

2. Project Cost Breakdown

Item	Quantity	Cost per Unit	Cost per Acre	Total Cost
SUNDAY CREEK (3.23 acres)				
Mobilization	1 L.S.	$ 2,000.00	$ 928.79	$ 3,000.00
Debris Removal	1 L.S.	1,850.00	572.76	1,850.00
Salvage & Replace Topsoil	846 LCY	3.30	863.24	2,788.27
Provide Water	2.5 KGAL	20.00	15.48	50.00
Close Adit Openings	8 Each	375.00	928.79	3,000.00
Regrade Area	365 LCY	1.08	121.51	392.47
Backfill Subsidence and/or Adit Depression	375 LCY	2.08	241.87	781.25
Reconstruct & Stabilize Drainage Channel	40 LCY	5.00	61.92	200.00
Backfill 2 Building Excavations	65 LCY	3.08	61.92	200.00
Waste Pile Disposal	135 LCY	1.00	41.80	135.00
Lime Placement	0.25 Acres	2,500.00	193.50	625.00
Provide Topsoil From Borrow Areas	260 LCY	3.00	241.49	780.00
Fertilize, Seed & Mulch	3.23 Acres	1,083.25	1,083.25	3,498.90
Farm Fence Type F-4M	5321.9 L.Ft.	1.00	1,647.65	5,321.90
Farm Fence Double Panel	46 Each	90.00	1,281.73	4,140.00
Farm Fence Single Panel	10 Each	75.00	232.20	750.00
Farm Fence Gate Type G-2	112 L.Ft.	5.00	173.37	560.00
SUNDAY CREEK TOTAL			$ 8,691.27	$28,072.79
HAY CREEK 30 (0.29 acres)				
Mobilization	1 L.S.	$ 1,000.00	$ 3,448.28	$ 1,000.00
Debris Removal	1 L.S.	150.00	517.24	150.00
Salvage & Replace Topsoil	206 LCY	3.30	2,341.17	678.94
Provide Water	0.5 KGAL	20.00	34.48	10.00
Regrade Area	100 LCY	1.08	370.79	107.53
Backfill Subsidence and/or Adit Depression	100 LCY	2.08	718.38	208.33
Backfill Air Vent	1 Each	100.00	344.83	100.00
Waste Pile Disposal	160 LCY	1.00	551.72	160.00
Fertilize, Seed & Mulch	0.29 Acres	1,083.25	1,083.25	314.14
HAY CREEK 30 TOTAL			$ 9,410.14	$ 2,728.94

2. Project Cost Breakdown (Cont.)

Item	Quantity	Cost per Unit	Cost per Acre	Total Cost
CHALK BUTTE (1.16 acres)				
Mobilization	1 L.S.	$ 1,000.00	$ 862.07	$ 1,000.00
Salvage & Replace Topsoil	459 LCY	3.30	1,304.13	1,512.79
Provide Water	2 Kgal	20.00	34.48	40.00
Backfill Subsidence and/or Adit Depression	5 LCY	2.08	8.98	10.42
Excavation & Backfill of Coal Fire Cracks	627 LCY	4.78	2,586.21	3,000.00
Backfill Temperature Probe Boreholes	3 Each	100.00	258.62	300.00
Fertilize, Seed & Mulch	1.16 Acres	1,083.25	1,083.25	1,256.57
CHALK BUTTE TOTAL			**$ 6,137.74**	**$ 7,119.78**
STAIR MAINTENANCE (0.14 acres)				
Mobilization	1 L.S.	$ 1,000.00	$ 7,142.86	$ 1,000.00
Debris Removal	1 L.S.	150.00	1,071.43	150.00
Backfill Subsidence and/or Adit Depressions	150 LCY	5.00	5,357.14	750.00
Provide Topsoil From Borrow Areas	115 LCY	6.52	5,357.14	750.00
Fertilize, Seed & Mulch	0.14 Acres	1,083.25	1,083.29	151.66
Farm Fence Type F-4M	289.6 L.Ft.	1.00	2,068.57	289.60
Farm Fence Double Panel	4 Each	90.00	2,571.43	360.00
Excavate Adit Opening	1 L.S.	1,250.00	8,928.57	1,250.00
STAIR MAINTENANCE TOTAL			**$33,580.43**	**$ 4,701.26**
COAL SLACK PILE (0.17 acres)				
Salvage & Replace Topsoil	326 LCY	$ 1.23	$ 2,352.94	$ 400.00
Waste Pile Disposal	1 L.S.	150.00	882.35	150.00
Lime Placement	0.13 Acres	2,500.00	1,911.76	325.00
Fertilize, Seed & Mulch	0.17 Acres	1,083.25	1,083.25	184.15
COAL SLACK PILE TOTAL			**$ 6,230.29**	**$ 1,059.15**

2. Project Cost Breakdown (Cont.)

Item	Quantity	Cost per Unit	Cost per Acre	Total Cost
EXTRA MINE (0.37 acres)				
Mobilization	1 L.S.	$ 1,500.00	$ 4,054.05	$ 1,500.00
Debris Removal	1 L.S.	2,000.00	5,405.41	2,000.00
Salvage & Replace Topsoil	270 LCY	2.96	2,162.16	800.00
Provide Water	2 KGAL	20.00	108.11	40.00
Close Adit	1 Each	375.00	1,013.51	375.00
Waste Pile Disposal	1 L.S.	225.00	608.11	225.00
Lime Placement	0.14 Acres	2,500.00	945.94	350.00
Fertilize, Seed & Mulch	0.37 Acres	1,083.25	1,083.25	400.80
EXTRA MINE TOTAL			$15,380.54	$ 5,690.80

3. Costs Per Yard

A total of 2482 cubic yards of topsoil were moved at a total lump sum price of $7,710.00 or $3.11 per yard.

An estimated 465 cubic yards of subsoil were moved in regrading at a lump sum cost of $500.00 or about $1.08 per yard.

An estimated 695 cubic yards of subsoil were used in backfilling subsidence, excavations or adit depressions at a total lump sum cost of $1,950.00 or about $2.81 per yard.

V. SUMMARY

A. Completed Reclamation

The Contractor completed the sites involved in this project in the allowable contract time, using 52 calendar days of the 60 days allowed or 87% of the total.

There were several small coal mining operations abandoned in the Sunday Creek area near Miles City. Nine small adits were closed. Subsidence associated with these mines was somewhat less than severe. However, there were relatively high dropoffs and some of the subsidence caused the mine openings to be exposed. Several subsidence holes and collapsed adits were backfilled.

At Chalk Butte, surface cracks caused by a coal seam fire were excavated and backfilled.

Subsidence at the previously-reclaimed Stair site reopened mine workings to the surface. The maintenance project at this site was done to mitigate the

hazards associated with this subsidence.

After the adits were plugged and the subsidences were backfilled, all coal slack areas were neutralized with lime. All disturbed areas, including access roads as required, were revegetated.

B. Comments

One of the adits (Adit 2 at Sunday Creek North) prior to reclamation was being used as an underground channel for a stream. This adit was backfilled with soil cement to resist erosion. Following backfilling, a new channel was artificially established to direct stream flows away from the adit.

The contractor was able to drill seed and crimp grass hay mulch at nearly all of the reclamation areas. This fact coupled with a very favorable summer weather-wise have contributed to very successful vegetation establishment.

The landowners, engineer, and contractor enjoyed good working relationships with one another. The landowner at Sunday Creek seemed a bit skeptical at first. However, after he saw the quality of the work being done, he came to us to reclaim the other small disturbances at abandoned coal mines.

C. Recommendations

We do not expect subsidence to continue at any of the Sunday Creek sites. The mines have been abandoned for several decades, and we were able to backfill the underground voids almost completely.

We do expect further subsidence at the Stair site. The mine workings have little cover, and the overburden is unconsolidated earth material. This site should be monitored.

APPENDIX A

SLIDE DESCRIPTIONS

BY PROJECT

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
SLIDE DESCRIPTIONS

SUNDAY CREEK NORTH

ASSIGNED NUMBER	DATE TAKEN	SUBJECT OR COMMENTS
Adit #1		
1	5/04/89	Pre-construction Adit #1.
2	5/05/89	Haul Road to Adit #1.
3	5/05/89	Placing Borrow into Adit #1.
4	5/05/89	Placing Borrow into Adit #1.
5	5/11/89	Mulching Haul Road to Adit #1.
6	5/11/89	Mulching Haul Road to Adit #1.
7	5/11/89	Mulching Complete Adit #2 and Haul Road to Adit #1.
Adit #2		
8	5/04/89	Pre-Construction Adit #2.
9	5/10/89	Dirt Dam Around Adit #2 for Directing Soil Cement.
10	5/10/89	Placing Soil Cement in Adit #2.
11	5/10/89	Placing Soil Cement in Adit #2.
12	5/10/89	Pushing Soil Cement into Adit #2 with Backhoe.
13	5/10/89	Pushing Dirt up Around Adit #2.
14	5/10/89	Rebuilding Channel Near Adit #2.
15	5/11/89	Excavating New Channel Near Adit #2.
16	5/11/89	Excavating New Channel Near Adit #2.
17	5/11/89	New Channel Next to Adit #2 After Regrading.
18	5/11/89	Seeding New Channel Area.
19	5/11/89	Mulching Complete on Drainage Channel Near Adit #2.

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
SLIDE DESCRIPTIONS

SUNDAY CREEK NORTH (Cont.)

ASSIGNED NUMBER	DATE TAKEN	SUBJECT OR COMMENTS
Adit #7		
20	5/04/89	Pre-construction Adit #7.
21	5/04/89	Topsoil from Adit #7.
22	5/05/89	Placing Borrow Material at Adit #7.
Coal Slack, Borrow Area 2, Adits #4, #5, #6 (Area 3)		
23	5/04/89	Pre-construction Adit #4.
24	5/05/89	Borrow to Adit #4.
25	5/05/89	Borrow to Adit #4.
26	5/04/89	Pre-construction Adit #5.
27	5/10/89	Borrow to Adit #5.
28	5/04/89	Pre-construction Adit #6.
29	5/10/89	Borrow to Adit #6.
30	5/10/89	Placing and Compacting Borrow at Adit #6.
31	5/04/89	Fording Sunday Creek.
32	5/04/89	Pre-construction Borrow Area.
33	5/04/89	Pre-construction Coal Slack #1.
34	5/11/89	Spreading Lime on Coal Slack.
35	5/11/89	Placing Topsoil on Coal Slack After Liming and Disking.
36	5/11/89	Mulching Complete on Borrow Area, Adit #4, #5, #6 and Coal Slack.
37	5/23/89	Post Construction Area 3.
38	5/23/89	Post Construction Area 3.
39	5/23/89	Post Construction Area 1, 2, & 3.

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
SLIDE DESCRIPTIONS

SUNDAY CREEK NORTH (Cont.)

ASSIGNED NUMBER	DATE TAKEN	SUBJECT OR COMMENTS
SP #1 - #4 (Area 1).		
40	5/04/89	Pre-construction SP #1.
41	5/10/89	Hauling Borrow to SP #1
42	5/04/89	Pre-construction SP #2.
43	5/04/89	Regrading SP #3 and #4.
44	5/10/89	Dressing Topsoil at SP #2 and #3.
45	5/11/89	Mulching Area #1.
46	5/11/89	Mulching Complete on Lower Portion Area #1.
47	5/11/89	Mulching Complete on SP #2.
48	5/11/89	Mulching Complete on Area 1 - SP #2, #3 and #4.
49	5/23/89	Post Construction Area 1.
SP #5 (Area 2)		
50	5/04/89	Pre-construction SP #5.
51	5/04/89	Removing Topsoil from SP #5.
52	5/10/89	Stripping Topsoil From Borrow Near SP #5.
53	5/10/89	Moving Borrow to Fill SP #5 Using D-8.
54	5/11/89	Spreading Mulch Over Area 2, SP #5, and Borrow.
55	5/11/89	Crimping Area #2.
56	5/11/89	Close-up of Crimping at Area #2.
57	5/11/89	Mulching Complete SP #5 and Borrow.
58	5/23/89	Post Construction Area 2.
59	5/23/89	Post Construction Area 2.
60	5/23/89	Post Construction Area 1 & 2.

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
SLIDE DESCRIPTIONS

SUNDAY CREEK SOUTH

ASSIGNED NUMBER	DATE TAKEN	SUBJECT OR COMMENTS
61	4/25/89	Pre-construction Adit #3.
62	4/25/89	Pre-construction Coal Slack Pile #1.
63	4/25/89	Pre-construction Building Excavation.
64	4/25/89	Pre-construction Adit #2.
65	4/25/89	Pre-construction SP #2.
66	4/25/89	Removing Topsoil Adit #1 and SP #1.
67	4/25/89	Removing Topsoil Adit #3.
68	4/25/89	Hauling Coal Slack to Adit #1 and SP #1.
69	4/25/89	Placing Coal Slack in Adit #1 and SP #1.
70	4/25/89	Removing Topsoil Building Excavation.
71	5/01/89	Adit #1, SP #1, Adit #3, During Topsoil Removal and Regrading.
72	5/09/89	Overall Sunday Creek South Completed Except for Gates.
73	5/09/89	Close-up of Crimping at Sunday Creek South.
74	5/09/89	Close-up of Crimping at Sunday Creek South.

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
SLIDE DESCRIPTIONS

SUNDAY CREEK EAST

ASSIGNED NUMBER	DATE TAKEN	SUBJECT OR COMMENTS
Equipment.		
75	4/25/89	Dodge Dump Truck.
76	5/02/89	Ferguson Tractor and McCormick Grain Drill.
77	5/02/89	110-11B Michigan/Clark 11 Yard Scraper.
78	5/02/89	Case 580 Construction King Backhoe/Front End Loader.
79	5/02/89	D-7 Caterpillar Dozer and Flatbed Trailer.
80	5/02/89	Aero-mulcher on C-65 Chevy Truck.
81	5/04/89	Bobcat With Post Hole Auger.
Sunday Creek East Work.		
82	4/25/89	Topsoil from Adit #1.
83	4/25/89	Topsoil from SP #5.
84	4/25/89	Topsoil Stockpile.
85	4/25/89	Hauling Borrow to Adit #1.
86	4/25/89	Borrow to SP #2 and SP #3.
87	4/25/89	Rebuilding Excavated Area to 3:1 Slope.
88	4/25/89	Rebuilding Excavated Area to 3:1 Slope.
89	4/25/89	Putting Out Debris Fire.
90	5/02/89	Borrow to Building 2 Area & Fencing West of Road in Background.
91	5/08/89	Spreading Lime on Coal Slack by Hand.
92	5/08/89	Disking Lime.
93	5/04/89	Spreading Topsoil on Excavated Area and Building 1.
94	5/08/89	Spreading Fertilizer in the Topsoil Stockpile Area.

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
SLIDE DESCRIPTIONS

SUNDAY CREEK EAST (Cont.)

ASSIGNED NUMBER	DATE TAKEN	SUBJECT OR COMMENTS
95	5/09/89	Excavated Area, Building #1 and #2 (Fire Pit) Prior to Seeding.
96	5/09/89	Seeding Excavated Area, Building #1 and #2.
97	5/08/89	Round Hay Bales Used for Mulch.
98	5/09/89	Loading Hay on Mulcher Truck.
99	5/10/89	SP #5, Adit #1 and Coal Slack Area After Mulching.
100	5/10/89	Excavated Area and Building Areas After Mulching.
101	5/10/89	Excavated Area, Building Area #1 and #2 After Mulching.
102	5/10/89	Borrow, Topsoil Pile, SP #1, #2, #3, #4 After Mulching.
103	5/08/89	Drilling Post Holes with Bobcat.
104	5/04/89	Setting Deadman in Fence Line.

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
SLIDE DESCRIPTIONS

SUNDAY CREEK WEST

ASSIGNED NUMBER	DATE TAKEN	SUBJECT OR COMMENTS
105	5/02/89	Sunday Creek Runoff in Response to Storm.
106	5/02/89	1/4 corner T8N, R27E, Above Excavated Area.
107	5/09/89	John Deere Tractor.
108	5/09/89	Crimper with Weight Added to Racks.
109	4/25/89	Pre-construction - Adit #1.
110	4/25/89	Pre-construction - Adit #2.
111	5/04/89	580 Case Backhoe Backfilling Adit #2.
112	5/04/89	Compacting Borrow in Adit #2.
113	5/10/89	Adit #2 After Mulching.
114	4/25/89	Topsoil Stockpile Area.
115	5/09/89	Spreading Mulch on Haul Road.
116	5/09/89	Close-up of Completed Crimping.
117	5/10/89	Topsoil Area and Haul Road After Mulching.
118	4/25/89	Stripping Topsoil Below SP #1, #2, #3 & #4.
119	5/02/89	Removing Topsoil from SP #1, #2, #3, and #4.
120	5/04/89	D-7 Cat Pushing Borrow to SP #1, #2, #3, and #4.
121	5/02/89	Filling and Compacting SP #2.
122	5/09/89	Spreading Mulch SP #1, #2, #3 and #4.
123	5/09/89	Spreading Mulch SP #1, #2, #3, and #4.
124	5/10/89	SP #1, #2, #3, #4, and Adit #1 After Mulching.
125	4/25/89	Stripping Topsoil from Excavated Area.
126	5/02/89	Topsoil Stripping and Removal from Excavated Area.

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
SLIDE DESCRIPTIONS

SUNDAY CREEK WEST (Cont.)

ASSIGNED NUMBER	DATE TAKEN	SUBJECT OR COMMENTS
127	5/02/89	Removing Topsoil from Excavated Area.
128	5/02/89	View of Excavated Area Prior to Backfilling with Borrow.
129	5/04/89	D-7 Cat Pushing Borrow to Excavated Area.
130	5/04/89	Excavated Area Finish Dressing - Before Topsoil.
131	5/10/89	Seeding Excavated Area.
132	5/10/89	Crimping Excavated Area.
133	5/10/89	Excavated Area and Haul Road After Mulching.
134	5/10/89	Haul Road and Excavated Area After Mulching.

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
SLIDE DESCRIPTIONS

CHALK BUTTE

ASSIGNED NUMBER	DATE TAKEN	SUBJECT OR COMMENTS
135	6/ /86	Aerial View of Fire Area.
136	7/14/87	Pre-construction View of SP #1.
137	7/14/87	Pre-construction View of Fire Cracking.
138	7/14/87	Close-up View of Fire Cracking.
139	5/15/89	Removing Topsoil from Cracks at the West End of Project.
140	5/15/89	Pre-cnstruction Borrow Area.
141	5/15/89	Hauling Borrow to Cracking Area.
142	5/16/89	Backfilled Trench Prior to Topsoil.
143	5/16/89	Backfilled Trench Prior to Topsoil.
144	5/16/89	Backfilled Trench Prior to Topsoil.
145	5/17/89	Seeding the Cracking Area.
146	5/17/89	Spreading Mulch on the Borrow Area.
147	5/17/89	Example of Crimping.
148	5/17/89	Crimping the Borrow Area.
149	5/17/89	Crimping the Borrow Area.
150	5/17/89	Overall View of Area After Mulching Completed.
151	5/17/89	Overall View of Area After Mulching Completed.
152	5/17/89	Overall View of Area After Mulching Completed.

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
SLIDE DESCRIPTIONS

HAY CREEK 30

ASSIGNED NUMBER	DATE TAKEN	SUBJECT OR COMMENTS
153	5/15/89	Coal Slack - Pre Construction.
154	5/15/89	Pre Construction - Subsidence Area.
155	5/15/89	Pre Construction - Cabin Area and Debris.
156	5/15/89	Pre Construction Air Vent.
157	5/15/89	Making Catch Basin for Water Around Air Vent.
158	5/15/89	Making Catch Basin for Water to Air Vent.
159	5/15/89	Dumping Water into Air Shaft.
160	5/15/89	Air Shaft Filled with Water - Time 12:45.
161	5/15/89	Water in Air Shaft - Time 3:18.
162	5/15/89	Water in Air Shaft 4 hours later.
163	5/15/89	D-7 Cat Removing Topsoil from Subsidence.
164	5/15/89	D-7 Cat Removing Topsoil from Subsidence.
165	5/15/89	D-7 Cat Pushing 580 Backhoe out of Subsidence Pit.
166	5/15/89	Pushing Coal Slack into Subsidence.
167	5/15/89	Pushing Coal Slack into Subsidence.
168	5/16/89	Coal Slack and Subsidence Area Prior to Seed and Mulch.
169	5/16/89	Coal Slack and Subsidence Area Prior to Seed and Mulch.
170	5/17/89	Slope of Subsidence After Mulching.
171	5/17/89	Coal Slack Area After Mulching.
172	5/17/89	Overall View of Area After Mulching.
173	5/17/89	Overall View of Area After Mulching.
174	5/17/89	Cement to Air Shaft.

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
SLIDE DESCRIPTIONS

STAIR MAINTENANCE

ASSIGNED NUMBER	DATE TAKEN	SUBJECT OR COMMENTS
175	5/24/89	Collapsed Adit.
176	5/24/89	Collapsed Adit and Fence.
177	5/24/89	Collapsed Adit and Fence.
178	5/24/89	Collapsed Adit and Fence.
179	5/24/89	Collapsed Adit and Fence.
180	5/24/89	Collapsed Adit and Fence.
181	5/24/89	Backhoe Excavating Adit.
182	5/24/89	Backhoe Excavating Adit.
183	5/24/89	Removing Timbers from the Adit.
184	5/24/89	Excavated Adit Prior to Backfilling.
185	5/24/89	Backfilling and Slope Dressing Complete.
186	6/13/89	Completed Fencing & Mulching - Looking S.E.
187	6/13/89	Completed Fencing & Mulching - Looking N.E.
188	6/13/89	Completed Fencing & Mulching - Looking N.E.
189	6/13/89	Completed Fencing & Mulching - Looking East.

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
SLIDE DESCRIPTIONS

COAL SLACK PILE

ASSIGNED NUMBER	DATE TAKEN	SUBJECT OR COMMENTS
190	6/14/89	Pre-Construction View of Coal Slack Pile.
191	6/14/89	Topsoil Removal Operation.
192	6/14/89	Spreading Topsoil.
193	6/14/89	Spreading Mulch.
194	6/14/89	Crimping the Mulch.
195	6/14/89	Crimping the Mulch.
196	6/14/89	Coal Slack Pile Project Complete.

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
SLIDE DESCRIPTIONS

EXTRA MINE

ASSIGNED NUMBER	DATE TAKEN	SUBJECT OR COMMENTS
197	6/12/89	Pre-Construction View of the Adit.
198	6/12/89	Pre-Construction View of the Debris.
199	6/12/89	Pre-Construction View of the Debris.
200	6/12/89	Crawler is Preparing a Burning Pit for Debris.
201	6/12/89	Debris Removal at Extra Mine.
202	6/12/89	Burning Debris and Stripping Topsoil.
203	6/12/89	Stripping Topsoil at the Extra Mine.
204	6/12/89	Stripping Topsoil at the Extra Mine.
205	6/12/89	Pushing Coal Slack into the Hillside.
206	6/12/89	Pushing Coal Slack into the Hill.
207	6/14/89	Spreading Lime.
208	6/14/89	Disking Lime into Coal Slack.
209	6/14/89	Spreading Topsoil.
210	6/14/89	Spreading Mulch.
211	6/14/89	Crimper with Two 425-Pound Concrete Weights.
212	6/14/89	Tracking Mulch on Hillside.
213	6/14/89	Tracking Mulch on Hillside.
214	6/14/89	Overall View of Completed Site.

PRE-CONST
ADIT #1

1

5-4-89
SPECTRUM
SUNDAY CRK. NORTH

HAUL ROAD TO ADIT 1
5-5-89

2

SUNDAY CRK. NORTH
SPECTRUM

BORROW TO ADIT 1
5-5-89

3

SUNDAY CRK. NORTH

BORROW TO ADIT 1
5-5-89

4

SUNDAY CRK. NORTH
SPECTRUM

MUKLUK HAUL RD. TO ADIT
5-11-89

5

SUNDAY CRK. NORTH

MUKHING HAUL RD. TO
ADIT 1
5-11-89

6

SUNDAY CRK. NORTH
SPECTRUM

MUKHING Complete
ADIT #2 &
HAUL ROAD

7

5-11-89
SPECTRUM
SUNDAY CRK. NORTH

PRE-CONST.
ADIT #2

8

5-9-89
SPECTRUM
SUNDAY CRK. NORTH

DIRT DAM AROUND
ADIT 2. TO
HOLD CONCRETE

9

5-10-89
SPECTRUM
SUNDAY CRK. NORTH

CEMENT TO ADIT #2
5-10-89

10

SUNDAY CRK. NORTH
SPECTRUM

CEMENT TO ADIT #2
5-10-89

11

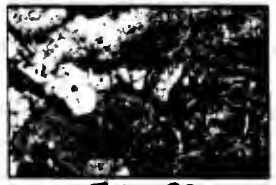
SUNDAY CRK. NORTH
SPECTRUM

PUSHING CEMENT IN
ADIT #2
WITH BACK HOE

12

5-10-89
SUNDAY CRK. NORTH

PUSHING DIRT UP
AROUND CEMENT ADIT #2



13

5-10-89
SPECTRUM
SUNDAY CRK. NORTH

REBUILDING CHANNEL
AROUND ADIT 2

14

5-10-89
SPECTRUM
SUNDAY CRK. NORTH

EXCAVATING NEW CHANNEL
NEAR ADIT #2.
5-11-89

15

SUNDAY CRK. NORTH
SPECTRUM

EXCAVATING NEW CHANNEL NEAR ADIT 2
5-X-89

16 SUNDAY CRK. NORTH
SPECTRUM

NEW CHANNEL NEXT TO ADIT 2 AFTER REGRADE

17 5-11-89
SUNDAY CRK NORTH

SEEDING NEW CHANNEL AREA

18 5-11-89
SUNDAY CRK. NORTH

MULCHING COMPLETED ON NEW CHANNEL NEAR ADIT 2

19 5-11-89
SPECTRUM
SUNDAY CRK. NORTH

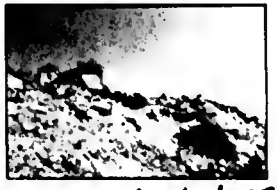
PRE-CONST.
ADIT #7

20 5-4-89
SPECTRUM
SUNDAY CRK. NORTH

TOPSOIL FROM ADIT 7

21 5-4-89
SUNDAY CRK. NORTH

BORROW TO ADIT #7
5-5-89



22 SUNDAY CRK NORTH
SPECTRUM

PRE-CONST
ADIT #4

23 5-4-89
SPECTRUM
SUNDAY CRK. NORTH

BORROW TO ADIT #4
5-5-89

24 SUNDAY CRK. NORTH
SPECTRUM

BORROW TO ADIT #4
5-5-89

25 SUNDAY CRK. NORTH
SPECTRUM

PRE-CONST.
ADIT #5

26 5-4-89
SPECTRUM
SUNDAY CRK. NORTH

BORROW TO ADIT #5
5-10-89

27 SUNDAY CRK. NORTH
SPECTRUM

PRE-CONST
ADIT #6

28 5-4-89
SPECTRUM
SUNDAY CRK. NORTH

BORROW TO ADIT #6
5-10-89

29 SUNDAY CRK. NORTH
SPECTRUM

BORROW & COMPACTION
ADIT #6
5-10-89

30 SUNDAY CRK. NORTH
SPECTRUM

FORMING SUNDAY CRK
5-4-89

31
SUNDAY CRK NRT

PRE-CONST BORROW AREA
5-4-89

32
SUNDAY CRK. NORTH
SPECTRUM

PRE-CONST. COAL STACK
5-4-89

33
SUNDAY CRK. NORTH
SPECTRUM ENGINEERING

SPREADING LIME ON COAL STACK
5-11-89

34
SUNDAY CRK. NORTH

TOPSOIL TO COAL STACK
5-11-89

35
SUNDAY CRK. NORTH
SPECTRUM

MULCHING COMPLETE ON BORROW AREA
ADITS 4, 5, 6 & COAL STACK

36
5-11-89
SPECTRUM
SUNDAY CRK. NORTH

POST CONST AREA 3
NORTH

37
5-23-89
SPECTRUM
SUNDAY CRK. North

POST CONST
AREA 3

38
5-23-89
SPECTRUM
SUNDAY CRK North

POST CONST. AREA 1, 2 & 3
North

39
5-23-89
SPECTRUM
SUNDAY CRK. North

PRE-CONST
SP-1

40
5-4-89
SPECTRUM
SUNDAY CRK. NORT

BORROW TO SP-1
5-10-89

41
SUNDAY CRK. NORTH
SPECTRUM

PRE - CONST
SP-2

42
5-4-89
SPECTRUM
SUNDAY CRK. NORTH

REGRADING SP3, & 4 5-4-89

43
SPECTRUM
SUNDAY CRK. NORTH

DRESSING TOPSOIL
SP-2 & 3

44
5-10-89
SPECTRUM
SUNDAY CRK North.

MULCHING AREA #1
5-11-89

45
SUNDAY CRK. NORTH
SPECTRUM

MULCH COMPLETE ON LOWER PORTION AREA 1

46

5-11-89
SPECTRUM
SUNDAY CRK. NORTH

MULCHING COMPLETE ON SP-2

47

5-11-89
SPECTRUM
SUNDAY CRK. NORTH

MULCHING COMPLETE AREA 1 SP-2, 3 & 4

48

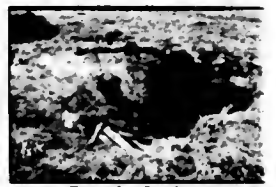
5-11-89
SPECTRUM
SUNDAY CRK. NORTH

POST CONST. AREA 1 North

49

5-23-89
SPECTRUM
SUNDAY CRK. North

PRE-CONST SP- #5



50

5-4-89
SPECTRUM
SUNDAY CRK. NORT

TOPSOIL REMOVAL SP 5

51

5-4-89
SPECTRUM
SUNDAY CRK. NORTH

STRIPPING TOPSOIL FROM BORROW NEAR SP-5

52

5-10-89
SPECTRUM
SUNDAY CRK. NORTH

BORROW TO SP-5 USING D-8. 5-10-89

53

SUNDAY CRK. North
SPECTRUM

SPREADING MULCH AREA SP-5 & BORROW 5-11-89

54

SUNDAY CRK. NORTH
SPECTRUM

CRIMPING MULCH ARE John Deere CRIMPER

55

5-11-89
SUNDAY CRK. NORTH

CLOSE UP OF CRIMPIN AREA #2

56

5-11-89
SUNDAY CRK. NORTH

MULCHING COMPLETE SP-5 & BORROW AREA

57

5-11-89
SPECTRUM
SUNDAY CRK. NORTH

POST CONST. AREA 2 North

58

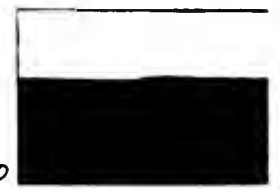
5-23-89
SPECTRUM
SUNDAY CRK. North

POST CONST. AREA 2 North

59

5-23-89
SPECTRUM
SUNDAY CREEK North

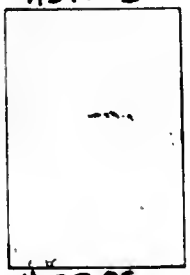
POST CONST AREA 1 North



60

5-23-89
SPECTRUM
SUNDAY CREEK

PRE-CONST
ADIT-3



61
4-25-89
SUNDAY CRK. South

PRE-CONST COAL SLACK
PILE # 1

62
4-25-89
SPECTRUM
SUNDAY CRK. South

PRE-Const. Building
EXCAVATION
4-25-89

63
SUNDAY CRK. SOUTH
SPECTRUM ENGINEERING

PRE-Const. ADIT #2
4-25-89

64
SUNDAY CRK. SOUTH
SPECTRUM

PRE-Const. SP-2
4-25-89

65
SUNDAY CRK. SOU
SPECTRUM

REMOVING TOPSOIL
ADIT #1, SP-1

66
4-25-89
SPECTRUM
SUNDAY CRK. South

REMOVING TOPSOIL FR
ADIT #3

67
4-25-89
SPECTRUM
SUNDAY CRK. South

COAL SLACK TO ADIT 1
& SP-1
4-25-89

68
SUNDAY CRK. SOUTH
SPECTRUM

COAL SLACK PLACED IN
ADIT 1, SP-1
4-25-89

69
SUNDAY CRK. SOUTH
SPECTRUM

TOPSOIL REMOVAL
FROM Building
EXCAVATION

70
SUNDAY CRK. SOUTH
SPECTRUM
4-25-89

ADIT 1, SP-1, ADIT 3 DURING
TOPSOIL REMOVAL

71
5-1-89
SPECTRUM
SUNDAY CRK. SOUTH

OVERALL SUNDAY CRK SOUTH
complete
EXCEPT FOR GATES

72
5-9-89
SPECTRUM
SUNDAY CRK. SOUTH

CLOSE UP CRIMPING
SUNDAY CRK.
SOUTH

73
5-9-89
SPECTRUM
SUNDAY CRK. SOUTH

CLOSE UP OF CRIMPING
5-9-89

74
SUNDAY CRK. SOUTH
SPECTRUM

Dodge Dump Trk.
4-25-89

75
SUNDAY CRK. EAST
SPECTRUM

FERGUSON TRACTOR & McCORMICK GRAIN DRILL

76
5-2-89
SPECTRUM
SUNDAY CREEK EAST

110-11B MICHIGAN/CLARK 14yd SCRAPER

77
5-2-89
SPECTRUM
SUNDAY CRK. EAST

CASE 580-CONSTRUCTION King BACKHOE
5-2-89

78
SUNDAY CRK. EAST
SPECTRUM

D-7 CATAPILLER
5-2-89

79
SUNDAY CRK. EAST
SPECTRUM

AREO-MULCHER ON C-65 CHEVY TRUCK

80
5-2-89
SPECTRUM
SUNDAY CRK. EAST.

BOBCAT W/ POST HOLE AUGER

81
5-4-89
SPECTRUM
SUNDAY CRK. EAST

TOPSOIL FROM ADIT 1
4-25-89

82
SUNDAY CRK. EAST
SPECTRUM

TOPSOIL FROM SP-5
4-25-89

83
SUNDAY CRK. EAST
SPECTRUM

TOPSOIL STOCKPILE WESTSIDE of ROAD.

84
4-25-89
SPECTRUM
SUNDAY CRK. EAST

BORROW TO ADIT 1
4-25-89

85
SUNDAY CRK. EAST.
SPECTRUM

BORROW TO SP. 2 & 3
w/ 110-11B MICH. SCRAPER

86
4-25-89
SPECTRUM.
SUNDAY CRK. EAST

REBUILDING EXCAVATED AREA 3:1
4-25-89

87
SUNDAY CRK. EAST
SPECTRUM

REBUILDING EXCAVATED AREA
4-25-89

88
SUNDAY CRK. EAST.
SPECTRUM

Putting out DEBRIS F
4-25-89

89
SUNDAY CRK. EAST.
SPECTRUM

BORROW TO BUILDING 2 & FENCING WEST OF ROAD IN BACKGROUND

90

5-2-89
SPECTRUM
SUNDAY CRK. EAST

SPREADING LIME ON COAL SLACK

91

5-8-89
SPECTRUM
SUNDAY CRK. EAST

DISKING LIME ON COAL SLACK
5-8-89

92

SUNDAY CRK. EAST
SPECTRUM
SPECTRUM

SPREADING TOPSOIL ON EXCAVATED AREA & BUILDING 1

93

5-4-89
SPECTRUM
SUNDAY CRK. EAST

SPREADING FERT. TOP STOCK PILE AREA
5-8-89

94

SUNDAY CRK. EAST
SPECTRUM

EXCAVATED AREA, Building 1 & 2 PRIOR TO SEEDING

95

5-9-89
SPECTRUM
SUNDAY CRK. EAST

SEEDING EXCAVATED AREA & Building 1 & 2

96

Sunday CRK. EAST
SPECTRUM
5-9-89

ROUND HAY BALES USED AS A FOR MULCH
5-8-89

97

SUNDAY CRK EAST
SPECTRUM

LOADING HAY ON MULCH TRUCK.
5-9-89

98

SUNDAY CRK. EAST
SPECTRUM

SP-6, ADIT 1 & CONC SLACK after MULCHING

99

5-10-89
SPECTRUM
SUNDAY CRK. EAST

EXCAVATED AREA & Building AREAS after MULCHING

100

SUNDAY CRK. EAST
5-10-89
SPECTRUM

EXCAVATED AREA, Building AREA 1 & 2 after MULCHING

101

5-10-89
SPECTRUM
SUNDAY CRK. EAST

BORROW, TOPSOIL & SP, 1, 2, 3 & 4 AREAS after MULCHING

102

5-10-89
SPECTRUM
SUNDAY CRK. EAST

DRILLING POST HOLES W/ BOBCAT
5-8-89

103

SUNDAY CRK. EAST
SPECTRUM

SETTING DEMONUM FENCELINE

104

5-4-89
SPECTRUM
SUNDAY CRK. EAS

SUNDAY CRK. RUNOFF

105

5-2-89

SUNDAY CRK. WEST

SECTIONLINE MARKER ABOVE EXCAVATED AREA

106

5-2-89

SUNDAY CRK. WEST

JOHN DEERE TRACTOR

107

5-9-89

SUNDAY CRK. WEST

CRIMPER WITH WEIGHT ADDED

108

5-9-89

SUNDAY CRK. WEST

ADIT # 1 PRE-CONST

109

4-25-89

SUNDAY CRK. WEST

ADIT #2 PRE-CONST.

110

4-25-89

SUNDAY CRK. WEST.

580 - FILLING ADIT # 2 W/ BORROW

111

5-4-89

SUNDAY CRK. WEST

COMPACTING BORROW IN ADIT #2 5-4-89

112

SUNDAY CRK. WEST

ADIT # 2 AFTER MULCHING 5-10-89

113

SUNDAY CRK. WEST.

TOPSOIL STOCKPILE AT 4-25-89

114

SUNDAY CRK WEST

SPREADING MULCH ON HAUL ROAD 5-9-89

115

SUNDAY CRK. WEST

CLOSE UP CRIMPING 5-9-89

116

SUNDAY CRK. WEST

TOPSOIL AREA & HAUL ROAD after mulching 5-10-89

117

SUNDAY CRK. WEST

STRIPPING TOPSOIL BELOW SP-1,2,3&4

118

SUNDAY CRK. WEST.

TOPSOIL REMOVAL FROM SP-1,2,3&4

119

5-2-89

SUNDAY CRK. WE

D-7 CAT PUSHING BORROW TO SP. 1, 2, 3 & 4

120

5-4-89

SUNDAY CRK. WEST.

FILLING & COMPACTING SP-2

121

5-2-89

SUNDAY CRK. WEST

SPREADING MULCH SP-1, 2, 3 & 4

5-9-89

122

SUNDAY CRK. WEST

SPREADING MULCH SP-1, 2, 3 & 4

5-9-89

123

SUNDAY CRK. WEST

AFTER MULCHING - SP. 3 & 4 AND ADIT #1

124

SUNDAY CRK. WEST

5-10-89

STRIPPING TOPSOIL FROM EXCAVATED AREA

125

SUNDAY CRK. WEST

TOPSOIL REMOVAL FROM EXCAVATED AREA

126

5-2-89

SUNDAY CRK. WEST

REMOVING TOPSOIL FROM EXCAVATED AREA

127

5-2-89

SUNDAY CRK. WEST

EXCAVATED AREA PRIOR TO Hauling Borrow

128

5-2-89

SUNDAY CRK. WEST

D-7 CAT PUSHING BORROW TO EXCAVATED AREA

129

5-4-89

SUNDAY CRK. WEST

EXCAVATED AREA PRIOR TO TOPSOIL

130

5-4-89

SUNDAY CRK. WEST

SEEDING EXCAVATED AREA - 5-10-89

131

SUNDAY CRK. WEST

CRIMPING EXCAVATED AREA 5-10-89

132

SUNDAY CRK. WEST

EXCAVATED AREA & HAUL ROAD. AFTER MULCHING

133

SUNDAY CRK. WEST

5-10-89

HAUL RD. & EXCAVATED AREA AFTER MULCHING

134

5-10-89

SUNDAY CRK. WEST

AERIAL VIEW OF FIRE AREA

135

6/86

CHALK BUTTE

PRE-CONSTRUCTION VIEW OF SP #1

136

7/14/87

CHALK BUTTE

PRE-CONSTRUCTION VIEW OF FIRE CRACKS

137

7/14/87

CHALK BUTTE

CLOSE UP VIEW OF FIRE CRACKING

138

7/14/87

CHALK BUTTE

TOPSOIL REMOVAL FROM CRACKING

139

5-15-89

CHALK BUTTE

PRE-CONST BORROW AREA

140

5-15-89

CHALK BUTTE

BORROW TO CRACKING AREA

141

CHALK BUTTE

5/16/89

BACK FILLED TRENCH PRIOR TO TOPSOIL

142

CHALK BUTTE

5/16/89

BACKFILLED TRENCH PRIOR to TOPSOIL

143

CHALK BUTTE

5/16/89

BACKFILLED TRENCH PRIOR to TOPSOIL

144

CHALK Butte

5/16/89

SEEDING CRACKING AREA

145

CHALK Butte

5/17/89

SPREADING MULCH ON BORROW AREA

146

CHALK Butte

5/17/89

EXAMPLE OF CRIMPING

147

CHALK BUTTE

5/17/89

CRIMPING BORROW AREA

148

CHALK Butte

5/17/89

CRIMPING BORROW AR

149

CHALK BUTTE

5/17/89

OVERALL OF AREA

Mulching Comp.

150 CHALK BUTTE

5/17/89

OVERALL OF AREA

Mulching Comp.

151 CHALK BUTTE

5/17/89

OVERALL OF AREA

Mulching Comp.

152 CHALK BUTTE

5/17/89

PRE-CONST
COAL SLACK

153

5-15-89
HAY CREEK 30

PRE-CONST
SUBSIDENCE AREA

154

5-15-89
HAY CREEK 30

PRE-CONST
CABIN AREA & DEBRIS

155

5-15-89
SPECTRUM
HAY CREEK 30

PRE-CONST
AIR VENT

156

5-16-89
HAY CRK. - SPECTRUM

MAKING CATCH BASIN
FOR WATER
AROUND AIR VENT

157

5-16-89
HAY CREEK 3

MAKING CATCH BASIN
FOR WATER
AROUND AIR VENT

158

5-15-89
HAY CREEK 30

DUMPING WATER
IN AIR VENT

159

5-15-89
HAY CREEK 30

AIR SHAFT FILLED W/
WATER
12:45

160

5-15-89
SPECTRUM
HAY CRK. 30

WATER IN AIR SHAFT
at 3:18

161

5-15-89
SPECTRUM
HAY CREEK 30

WATER IN AIR SHA
4hrs Later

162

HAY CREEK
SPECTRUM
5/15/89

REMOVING TOPSOIL FROM
SUBSIDENCE PIT

163

5-15-89
HAY CRK. 30

TOPSOIL FROM
SUBSIDENCE

164

5-15-89
SPECTRUM
HAY CREEK 30

CAT PUSHING BACKHOE
OUT OF PIT

165

5-15-89
HAY CREEK 30

PUSHING COAL SLACK
INTO SUBSIDENCE

166

5-15-89
SPECTRUM
HAY CREEK 30

COAL SLACK INTO
SUBSIDENCE

167

5-15-89
HAY CREEK

Coal Slack & Subsidence
area - prior to mulch

168
Hay Crk 30
Spectrum
5/16/89

Coal Slack & Subsidence
prior to seed & mulch

169
Hay Crk 30
Spectrum
5/16/89

Slope of Subsidence
after mulching

170
Hay Creek 30
Spectrum
5/17/89

Coal Slack area after
mulching

171
Hay Creek 30
5/17/89

Overall of area
after mulchi

172
Hay Crk 30
5/17/89

Overall of area
After mulching

173
Hay Crk. 30
Spectrum
5/17/89

Cementing
Air Shaft

174
Hay Crk
5/17/89

Collapsed ADIT
Looking West

175
5/24/89
STAIR-SPECTRUM

CAVED ADIT
& FENCE

176
5/24/89
STAIR-SPECTRUM

CAVED ADIT
Looking North

177
5/24/89
STAIR-SPECTRUM

CAVED ADIT

178
5/24/89
STAIR-SPECTRUM

CAVED ADIT

179
5/24/89
STAIR-SPECT

CAVED ADIT

180
5/24/89 SPECTRUM
STAIR

BACKHOE EXCAVATING
Entrance to ADIT

181
5/24/89 SPECTRUM
STAIR

BACKHOE EXCAVATING
Entrance to ADIT

182
5/24/89 SPECTRUM
STAIR

REMOVING TIMBERS
FROM ADIT

183
5/24/89 SPECTRUM
STAIR

ADIT OPENING
PRIOR TO BACKFILL

184
5/24/89-SPECTRU
STAIR MAIN

BACK FILL AND
SLOPE DRESSING COMP.

185
5/24/89 SPECTRUM
STAIR

Completed FENCING
& mulching → S.E.

186
STAIR MAINT.
6-13-89
[redacted].SPECTRUM

Completed FENCING &
mulching

187
STAIR MAINT.
6-13-89-SPECTRUM
SUNOMA CREEK PROJ.

Completed FENCING &
mulching
SPECTRUM ENG.

188
STAIR MAINT.
6-13-89
SUNOMA CREEK PROJ.

Completed FENCING &
mulching

189
STAIR MAINT
6-13-89
SUNOMA CREEK

PRE-Const
COAL SLACK
SPECTRUM

190

6-14-89

SUNDAY CRK. PROJ.

TOP SOIL REMOVAL
(COAL SLACK)

191

6-14-89

SUNDAY CR. PROJ.

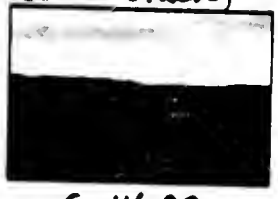
SPREADING TOPSOIL
(COAL SLACK)

192

6-14-89

SUNDAY CRK. PROJ.

MULCHING
(COAL SLACK)



193

6-14-89

SUNDAY CREEK PROJ.

CRIMPING
(COAL SLACK)

194

6-14-89

SPECTRUM
SUNDAY CR PROJ

CRIMPING
(COAL SLACK)

195

6-14-89

SUNDAY CRK. PROJ.

PROJECT COMPLETE
COAL SLACK PILE
SPECTRUM

196

6-14-89

SUNDAY CR. PROJ.

PRE-CONST HAUL ROAD
EXTRA MINE

197

6-12-89
SPECTRUM
SUNDAY CREEK

PRE-CONST
DEBRIS

198

EXTRA MINE
6-12-89
SUNDAY CRK.

PRE-CONST
DEBRIS

199

EXTRA MINE
6-12-89
SUNDAY CREEK

PRE-CONST. DEBRIS
& Digging burn P.1

200

EXTRA MINE
6-12-89
SUNDAY CRK.

DEBRIS REMOVAL
SPECTRUM

201

EXTRA MINE
6-12-89
SUNDAY CRK.

BURNING DEBRIS
& TOPSOIL REMOVAL

202

EXTRA MINE
6-12-89
SUNDAY CREEK

STRIPPING TOPSOIL
SPECTRUM

203

EXTRA MINE
6-12-89
SUNDAY CREEK

TOP SOIL REMOVAL
EXTRA MINE

204

6-12-89
SPECTRUM
SUNDAY CREEK

Pushing Coal Slack into
Hillside
EXTRA MINE

205

6-12-89
SPECTRUM
SUNDAY CREEK

Pushing Coal Slack
into hill

206

EXTRA MINE
6-12-89
SUNDAY CRK.

SPREADING LIME
ON COAL SLACK
(EXTRA MINE)

207

6-14-89
SPECTRUM
SUNDAY CRK. PROJECT

DISKING LIME ON
COAL SLACK
(EXTRA MINE)

208

6-14-89
SPECTRUM
SUNDAY CRK. PROJECT

SPREADING TOPSOIL ON COAL SLACK (EXTRA MINE)

209

6-14-89
SPECTRUM
SUNDAY CRK. PROJECT

SPREADING MULCH (EXTRA MINE)

210

6-14-89
SPECTRUM
SUNDAY CRK. PROJECT

CRIMPER W/NEW WEIGHT EXTRA MINE

211

6-12-89
SPECTRUM
SUNDAY CRK

TRACKING MULCH ON HILLSIDE (EXTRA MINE)

212

6-14-89
SPECTRUM
SUNDAY CRK. PROJ.

TRACKING MULCH ON HILLSIDE EXTRA MINE

213

6-14-89
SUNDAY CRK. PROJ.

OVERALL OF completed Project

214

EXTRA MINE
6-14-89
SUNDAY CRK. PROJ.

APPENDIX B

FINAL PAY REQUEST

AND

CHANGE ORDER

RECEIVED
JUN 21 1989
STATE LANDS

Payment Request No. 1
Final Payment Request

From: November 10, 1988 To: June 15, 1988
Project Name: Sunday Creek, Hay Creek 30 and Chalk Butte Project
Location: Custer and Garfield Counties, Montana
Project No.: Mont A/E 88-46-122
Name of Contractor: Mitchell Brothers, Inc.
Address: Box 726
Glendive, MT 59330

Summary Of Project Status

Amount of Original Contract	$	38,780.39
Amount of Approved Change Order(s)		10,592.33
TOTAL CONTRACT AMOUNT		49,372.72
Contract Time Used to Date		52 Days
Percentage of Contract Time Used		87 %
Percentage of Contract Amount Earned		100 %

Original Contract Amount Completed	37,921.51
Change Order(s) Amount Completed	11,451.21
Amount for Material On Site	0.00
TOTAL AMOUNT Earned to Date	49,372.72
Less Previous Amount Earned	0.00
Amount Payable This Period	49,372.72
Less 1% Gross Receipts Tax	493.73
TOTAL DUE CONTRACTOR THIS PERIOD	48,878.99

Requested By: Mitchell Brothers, Inc. (Contractor) Date: 6/20/89

Checked By: Spectrum Engineering Gary W Rome (Engineer) Date: 6/19/89

Approved By: Department of State Lands Abandoned Mine Reclamation Bureau (Owner) Date: 6/22/89

PAY REQUEST NO. 1
SPECTRUM ENGINEERING

Abandoned Mine Reclamation Bureau

SUNDAY CREEK, HAY CREEK 30 AND CHALK BUTTE
CUSTER AND GARFIELD COUNTIES
MONT A/E 88-46-122

Bid Opening: October 25, 1988 Page 1 of 2

Mitchell Bro's Inc.
Glendive
2866A

Item No.	Est. Quantity	Unit	Description	Unit Price	Total Price	Units Completed Original Contract	Units Completed Stair Maint.	Units Completed Extra Mine	Units Completed Extra Slack Dump	Total This Request	Amount Payable Original Contract	Amount Payable Stair Maint.	Amount Payable Extra Mine	Amount Payable Extra Slack Dump	Total This Request
1	1	LUMP SUM	MOBILIZATION	XXXXXXX	$5,000.00	1.00	0.20	0.30	0.00	1.50	$5,000.00	$1,000.00	$1,500.00	$0.00	$7,500.00
2	1	LUMP SUM	DEBRIS REMOVAL	XXXXXXX	2,000.00	1.00	0.08	1.00	0.00	2.08	2,000.00	150.00	2,000.00	0.00	4,150.00
3	1	LUMP SUM	SALVAGE AND REPLACE TOPSOIL	XXXXXXX	4,980.00	1.00	0.00	0.16	0.08	1.24	4,980.00	0.00	800.00	400.00	6,180.00
4	40.5	KGAL	PROVIDE WATER AND WATER INJECTION	20.00	810.00	5.00	0.00	2.00	0.00	7.00	100.00	0.00	40.00	0.00	140.00
5	8	EACH	CLOSE ADIT OPENINGS	375.00	3,000.00	8.00	0.00	1.00	0.00	9.00	3,000.00	0.00	375.00	0.00	3,375.00
6	1	LUMP SUM	REGRADE AREA	XXXXXXX	500.00	1.00	0.00	0.00	0.00	1.00	500.00	0.00	0.00	0.00	500.00
7	1	LUMP SUM	BACKFILL SUBSIDENCE AND/OR COLLAPSED ADIT DEPRESSIONS	XXXXXXX	1,000.00	1.00	0.75	0.00	0.00	1.75	1,000.00	750.00	0.00	0.00	1,750.00
8	1	LUMP SUM	RECONSTRUCT AND STABILIZE DRAINAGE CHANNEL	XXXXXXX	200.00	1.00	0.00	0.00	0.00	1.00	200.00	0.00	0.00	0.00	200.00
9	1	LUMP SUM	BACKFILL 2 BUILDING EXCAVATIONS	XXXXXXX	200.00	1.00	0.00	0.00	0.00	1.00	200.00	0.00	0.00	0.00	200.00
10	1	LUMP SUM	BACKFILL AIR VENT	XXXXXXX	100.00	1.00	0.00	0.00	0.00	1.00	100.00	0.00	0.00	0.00	100.00
11	1	LUMP SUM	EXCAVATION AND BACKFILL OF COAL FIRE CRACKS & SINK HOLES	XXXXXXX	3,000.00	1.00	0.00	0.00	0.00	1.00	3,000.00	0.00	0.00	0.00	3,000.00
12	3	EACH	BACKFILL TEMPERATURE PROBE BOREHOLES	100.00	300.00	3.00	0.00	0.00	0.00	3.00	300.00	0.00	0.00	0.00	300.00
13	1	LUMP SUM	WASTE PILE DISPOSAL	XXXXXXX	295.00	1.00	0.00	0.76	0.51	2.27	295.00	0.00	225.00	150.00	670.00
14	0.17	ACRES	LIME PLACEMENT	2500.00	425.00	0.25	0.00	0.14	0.13	0.52	625.00	0.00	350.00	325.00	1,300.00
15	1	LUMP SUM	PROVIDE TOPSOIL FROM BORROW AREAS	XXXXXXX	780.00	1.00	0.96	0.00	0.00	1.96	780.00	750.00	0.00	0.00	1,530.00
16	5.35	ACRES	FERTILIZE, SEED AND HAY MULCH	1083.25	5,795.39	4.68	0.14	0.37	0.17	5.36	5,069.61	151.66	400.80	184.15	5,806.22
17	3890	L. FEET	FARM FENCE - TYPE F-4M	1.00	3,890.00	5321.90	289.60	0.00	0.00	5611.50	5,321.90	289.60	0.00	0.00	5,611.50
18	56	EACH	FARM FENCE DOUBLE PANEL	90.00	5,040.00	46.00	4.00	0.00	0.00	50.00	4,140.00	360.00	0.00	0.00	4,500.00
19	11	EACH	FARM FENCE SINGLE PANEL	75.00	825.00	10.00	0.00	0.00	0.00	10.00	750.00	0.00	0.00	0.00	750.00
20	128	L. FEET	8 FARM FENCE GATES - TYPE G-2	5.00	640.00	112.00	0.00	0.00	0.00	112.00	560.00	0.00	0.00	0.00	560.00
21	1	LUMP SUM	EXCAVATE ADIT - STAIR MAINT.	XXXXXXX	1,250.00	0.00	1.00	0.00	0.00	1.00	0.00	1,250.00	0.00	0.00	1,250.00
TOTAL BASE BID					$38,780.39						$37,321.51	$4,701.26	$5,630.80	$1,059.15	$49,372.72

RECEIVED
JUN 21 198
STATE LANDS

SECTION II

2.12 CHANGE ORDER

Order No. 1
Date: 6/19/89
Agreement Date: 11/10/88

NAME OF PROJECT: Sunday Creek, Hay Creek 30 and Chalk Butte Project

Custer and Garfield Counties, Montana MONT A/E 88-46-122

OWNER: Montana Department of State Lands, Abandoned Mine Reclamation Bureau

CONTRACTOR: Mitchell Brothers Construction

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show Percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MAT'LS.	LABOR	EQUIP.	MISC.	TOTAL UNIT COST	
1.	Mobilization	Lump Sum					$2,500.00
2.	Debris Removal	Lump Sum					2,150.00
3.	Salvage and Replace Topsoil	Lump Sum					1,200.00
4.	Provide Water						
	7.0 - 40.5 = -33.5 KGal					20.00	(670.)
5.	Close Adit Openings						
	1 Each					375.00	375.00
7.	Backfill subsidence	Lump Sum					750.00
13.	Waste Pile Disposal	Lump Sum					375.00
14.	Lime Placement						
	0.52 - 0.17 = +0.35 Acres					2500.00	875.00
15.	Provide Topsoil From Borrow Areas	Lump Sum				750.00	750.00
16.	Fertilize, Seed & Hay Mulch						
	5.36 - 5.35 = 0.01 Acres					1083.25	10.83
17.	Farm Fence - Type F-4M						
	5611.50 - 3890 = 1721.5 L. Feet					1.00	1,721.50
18.	Farm Fence Double Panel						
	50 - 56 = -6 each					90.00	(540.)
19.	Farm Fence Single Panel						
	10 - 11 = -1 each					75.00	(75.)
20.	Farm Fence Gates	Lump Sum					
	112 - 128 = -16 L. Feet					5.00	(80.)
21.	Excavate Adit at Stair Maintenance	Lump Sum					1,250.00
	TOTAL COST - MAT'LS, LABOR, EQUIPMENT & MISC.						$10,592.33
	OVERHEAD & PROFIT @ %						
	GRAND TOTAL - THIS CHANGE ORDER						10,592.33

Original Contract Price $ 38,780.39

Current Contract Price Adjusted by Previous Change Order 38,780.39

Cost this Change Order (+ or -) +10,592.33

New Contract Price Including this Change Order $ 49,372.72

The completion date as set forth in the Contract Documents shall be (unchanged, increased, decreased) by 0 calendar days.

The date for completion of all work will be June 24, 1989.

Description and Justification for Change:

All lump sum changes are due to the three extra sites incorporated into this project, namely: 1) Stair Maintenance Site; 2) EXTRA MINE located in SE¼ Section 35, Township 9 North, Range 46 East and 3) Extra Slack Dump located SE¼NE¼ Section 13, Township 8 North, Range 46 East. Lump sum prices were negotiated with the Contractor and are consistent with the costs for similar work done under the original scope of work.

Unit price items are adjusted to account for the actual quantity of work done. Unit prices remain constant at the bid unit amount.

A breakdown of Line Item costs site by site is attached.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bonds shall apply and extend to the contract as there by modified or amended per this Change Order. The Principal and the surety further agree that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby increased by _____ _____($_____) (one hundred (100) percent of the Change Order amount) and the penalty of the applicable Payment Bond or Bonds is hereby increased by _____ _____($_____) (one hundred (100) percent of the Change Order amount).

COUNTERSIGNED BY MONTANA RESIDENT AGENT

_____

_____

SURETY

_____

By: _____
(Seal)

Recommended by: _____, Engineer

Accepted by: _____, Contractor

Approved by: _____, Owner

APPENDIX C

ENGINEERING VERSUS
CONSTRUCTION COST ANALYSIS

SUNDAY CREEK, HAY CREEK 30, AND CHALK BUTTE
FINAL REPORT

ANALYSIS OF PROFESSIONAL SERVICE FEES
DATE OF PREPARATION: SEPTEMBER 11, 1989

PROFESSIONAL SERVICE	AMOUNT
o Data Gathering, Site Evaluation, Mapping, Preliminary and Final Engineering, Bid Documents	$ 30,591.33
o Construction Administration, Construction Inspection, Final Report Preparation	$ 19,986.70
SPECTRUM ENGINEERING COSTS	$ 50,578.03
CONSTRUCTION COSTS	$ 49,372.72

PERCENTAGE ANALYSIS	PERCENT
DESIGN ENGINEERING COST COMPARED TO CONSTRUCTION COST	62.0 %
CONSTRUCTION ENGINEERING COST COMPARED TO CONSTRUCTION COST	40.5 %
TOTAL ENGINEERING COST COMPARED TO CONSTRUCTION COST	102.4 %

REMARKS: Services provided include lien determination, landowner contact and consent, budget preparation, grant application, weed board approval, basic engineering, construction staking, contract administration, quantity accounting and full time construction/reclamation inspection. The project involved three project areas with diverse reclamation requirements. An additional three smaller sites were also addressed under this construction project.

APPENDIX D

BID TABULATION AND

ENGINEER'S ESTIMATE

SUNDAY CREEK, HAY CREEK 30 AND CHALK BUTTE
CUSTER AND GARFIELD COUNTIES
MONT A/E 88-46-122

Bid Opening: October 25, 1988 Page 1 of 2

Item No.	Est. Quantity	Unit	Description	ENGINEER'S ESTIMATE Spectrum Engineering Billings, Montana Unit Price	ENGINEER'S ESTIMATE Spectrum Engineering Billings, Montana Total Price	Mitchell Bro's Inc. Glendive 2866A Unit Price	Mitchell Bro's Inc. Glendive 2866A Total Price	Stevens & Feller Const. Billings 6224A Unit Price	Stevens & Feller Const. Billings 6224A Total Price
1	1	LUMP SUM	MOBILIZATION	XXXXXXX	$5,000.00	XXXXXXX	$5,000.00	XXXXXXX	$3,000.00
2	1	LUMP SUM	DEBRIS REMOVAL	XXXXXXX	2,200.00	XXXXXXX	2,000.00	XXXXXXX	2,500.00
3	1	LUMP SUM	SALVAGE AND REPLACE TOPSOIL	XXXXXXX	5,020.00	XXXXXXX	4,980.00	XXXXXXX	3,735.00
4	40.5	KGAL	PROVIDE WATER AND WATER INJECTION	35.00	1,417.50	20.00	810.00	30.00	1,215.00
5	8	EACH	CLOSE ADIT OPENINGS	200.00	1,600.00	375.00	3,000.00	350.00	2,800.00
6	1	LUMP SUM	REGRADE AREA	XXXXXXX	1,030.00	XXXXXXX	500.00	XXXXXXX	465.00
7	1	LUMP SUM	BACKFILL SUBSIDENCE AND/OR COLLAPSED ADIT DEPRESSIONS	XXXXXXX	1,475.00	XXXXXXX	1,000.00	XXXXXXX	480.00
8	1	LUMP SUM	RECONSTRUCT AND STABILIZE DRAINAGE CHANNEL	XXXXXXX	200.00	XXXXXXX	200.00	XXXXXXX	350.00
9	1	LUMP SUM	BACKFILL 2 BUILDING EXCAVATIONS	XXXXXXX	195.00	XXXXXXX	200.00	XXXXXXX	350.00
10	1	LUMP SUM	BACKFILL AIR VENT	XXXXXXX	300.00	XXXXXXX	100.00	XXXXXXX	250.00
11	1	LUMP SUM	EXCAVATION AND BACKFILL OF COAL FIRE CRACKS & SINK HOLES	XXXXXXX	1,500.00	XXXXXXX	3,000.00	XXXXXXX	750.00
12	3	EACH	BACKFILL TEMPERATURE PROBE BOREHOLES	300.00	900.00	100.00	300.00	300.00	900.00
13	1	LUMP SUM	WASTE PILE DISPOSAL	XXXXXXX	590.00	XXXXXXX	295.00	XXXXXXX	500.00
14	0.17	ACRES	LIME PLACEMENT	2500.00	425.00	2500.00	425.00	2000.00	340.00
15	1	LUMP SUM	PROVIDE TOPSOIL FROM BORROW AREAS	XXXXXXX	780.00	XXXXXXX	780.00	XXXXXXX	500.00
16	5.35	ACRES	FERTILIZE, SEED AND HAY MULCH	2800.00	14,980.00	1083.25	5,795.39	1500.00	8,025.00
17	3890	L. FEET	FARM FENCE - TYPE F-4M	1.25	4,862.50	1.00	3,890.00	1.25	4,862.50
18	56	EACH	FARM FENCE DOUBLE PANEL	125.00	7,000.00	90.00	5,040.00	125.00	7,000.00
19	11	EACH	FARM FENCE SINGLE PANEL	80.00	880.00	75.00	825.00	75.00	825.00
20	128	L. FEET	8 FARM FENCE GATES - TYPE G-2	8.00	1,024.00	5.00	640.00	3.00	384.00
TOTAL BASE BID					$51,379.00		$38,780.39		$39,231.50

SUNDAY CREEK, HAY CREEK 30 AND CHALK BUTTE
CUSTER AND GARFIELD COUNTIES
MONT A/E 88-46-122

Bid Opening: October 25, 1988

Item No.	Est. Quantity	Unit	Description	L.P. Anderson Cont. Inc. Glendive 1157A Unit Price	L.P. Anderson Cont. Inc. Glendive 1157A Total Price	Doeden Construction Co. Miles City 2893A Unit Price	Doeden Construction Co. Miles City 2893A Total Price	Hugh Brindley Winnett 6593A Unit Price	Hugh Brindley Winnett 6593A Total Price
1	1	LUMP SUM	MOBILIZATION	XXXXXXX	$3,500.00	XXXXXXX	$4,675.00	XXXXXXX	$2,160.00
2	1	LUMP SUM	DEBRIS REMOVAL	XXXXXXX	2,250.00	XXXXXXX	1,000.00	XXXXXXX	1,400.00
3	1	LUMP SUM	SALVAGE AND REPLACE TOPSOIL	XXXXXXX	6,500.00	XXXXXXX	4,980.00	XXXXXXX	7,500.00
4	40.5	KBAL	PROVIDE WATER AND WATER INJECTION	25.00	1,012.50	74.00	2,997.00	40.00	1,620.00
5	8	EACH	CLOSE ADIT OPENINGS	450.00	3,600.00	250.00	2,000.00	450.00	3,600.00
6	1	LUMP SUM	REGRADE AREA	XXXXXXX	1,200.00	XXXXXXX	2,400.00	XXXXXXX	1,850.00
7	1	LUMP SUM	BACKFILL SUBSIDENCE AND/OR COLLAPSED ADIT DEPRESSIONS	XXXXXXX	1,200.00	XXXXXXX	500.00	XXXXXXX	1,550.00
8	1	LUMP SUM	RECONSTRUCT AND STABILIZE DRAINAGE CHANNEL	XXXXXXX	200.00	XXXXXXX	950.00	XXXXXXX	425.00
9	1	LUMP SUM	BACKFILL 2 BUILDING EXCAVATIONS	XXXXXXX	250.00	XXXXXXX	500.00	XXXXXXX	500.00
10	1	LUMP SUM	BACKFILL AIR VENT	XXXXXXX	100.00	XXXXXXX	500.00	XXXXXXX	2,199.81
11	1	LUMP SUM	EXCAVATION AND BACKFILL OF COAL FIRE CRACKS & SINK HOLES	XXXXXXX	800.00	XXXXXXX	1,050.00	XXXXXXX	2,373.30
12	3	EACH	BACKFILL TEMPERATURE PROBE BOREHOLES	150.00	450.00	150.00	450.00	250.00	750.00
13	1	LUMP SUM	WASTE PILE DISPOSAL	XXXXXXX	600.00	XXXXXXX	400.00	XXXXXXX	590.00
14	0.17	ACRES	LIME PLACEMENT	4000.00	680.00	3800.00	646.00	1500.00	255.00
15	1	LUMP SUM	PROVIDE TOPSOIL FROM BORROW AREAS	XXXXXXX	520.00	XXXXXXX	715.00	XXXXXXX	1,040.00
16	5.35	ACRES	FERTILIZE, SEED AND HAY MULCH	1200.00	6,420.00	1350.00	7,222.50	897.10	4,799.49
17	3890	L. FEET	FARM FENCE - TYPE F-4M	0.87	3,384.30	1.00	3,890.00	0.535	2,081.15
18	56	EACH	FARM FENCE DOUBLE PANEL	92.00	5,152.00	125.00	7,000.00	156.09	8,741.04
19	11	EACH	FARM FENCE SINGLE PANEL	75.00	825.00	95.00	1,045.00	106.81	1,174.91
20	128	L. FEET	8 FARM FENCE GATES - TYPE G-2	5.00	640.00	10.00	1,280.00	3.75	480.00
TOTAL BASE BID					$39,283.80		$44,200.50		$45,089.70

Abandoned Mine Reclamation Bureau

STATISTICS

SUNDAY CREEK, HAY CREEK 30 AND CHALK BUTTE
CUSTER AND GARFIELD COUNTIES
MONT A/E 88-46-122

Bid Opening: October 25, 1988 Page 1 of 1

ENGINEER'S ESTIMATE
Spectrum Engineering
Billings, Montana

BID RANGE
$ PER UNIT

BID RANGE
TOTAL COST

Item No.	Est. Quantity	Unit	Description	Unit Price	Total Price	LOW	HIGH	AVERAGE	LOW	HIGH	AVERAGE
1	1	LUMP SUM	MOBILIZATION	XXXXXXX	$5,000.00	2,160.00	5,000.00	3,667.00	2,160.00	5,000.00	3,667.00
2	1	LUMP SUM	DEBRIS REMOVAL	XXXXXXX	2,200.00	1,000.00	2,500.00	1,830.00	1,000.00	2,500.00	1,830.00
3	1	LUMP SUM	SALVAGE AND REPLACE TOPSOIL	XXXXXXX	5,020.00	3,735.00	7,500.00	5,539.00	3,735.00	7,500.00	5,539.00
4	40.5	KGAL	PROVIDE WATER AND WATER INJECTION	35.00	1,417.50	20.00	74.00	37.80	810.00	2,997.00	1,530.90
5	8	EACH	CLOSE ADIT OPENINGS	200.00	1,600.00	250.00	450.00	375.00	2,000.00	3,600.00	3,000.00
6	1	LUMP SUM	REGRADE AREA	XXXXXXX	1,030.00	465.00	2,400.00	1,283.00	465.00	2,400.00	1,283.00
7	1	LUMP SUM	BACKFILL SUBSIDENCE AND/OR COLLAPSED ADIT DEPRESSIONS	XXXXXXX	1,475.00	480.00	1,550.00	946.00	480.00	1,550.00	946.00
8	1	LUMP SUM	RECONSTRUCT AND STABILIZE DRAINAGE CHANNEL	XXXXXXX	200.00	200.00	950.00	425.00	200.00	950.00	425.00
9	1	LUMP SUM	BACKFILL 2 BUILDING EXCAVATIONS	XXXXXXX	195.00	200.00	500.00	360.00	200.00	500.00	360.00
10	1	LUMP SUM	BACKFILL AIR VENT	XXXXXXX	300.00	100.00	2,199.81	629.96	100.00	2,199.81	629.96
11	1	LUMP SUM	EXCAVATION AND BACKFILL OF COAL FIRE CRACKS & SINK HOLES	XXXXXXX	1,500.00	750.00	3,000.00	1,594.66	750.00	3,000.00	1,594.66
12	3	EACH	BACKFILL TEMPERATURE PROBE BOREHOLES	300.00	900.00	100.00	300.00	190.00	300.00	900.00	570.00
13	1	LUMP SUM	WASTE PILE DISPOSAL	XXXXXXX	590.00	295.00	600.00	477.00	295.00	600.00	477.00
14	0.17	ACRES	LIME PLACEMENT	2500.00	425.00	1,500.00	4,000.00	2,760.00	255.00	680.00	469.20
15	1	LUMP SUM	PROVIDE TOPSOIL FROM BORROW AREAS	XXXXXXX	780.00	500.00	1,040.00	711.00	500.00	1,040.00	711.00
16	5.35	ACRES	FERTILIZE, SEED AND HAY MULCH	2800.00	14,980.00	897.10	1,500.00	1,206.07	4,799.49	8,025.00	6,452.47
17	3890	L. FEET	FARM FENCE - TYPE F-4M	1.25	4,862.50	0.54	1.25	0.93	2,081.15	4,862.50	3,621.59
18	56	EACH	FARM FENCE DOUBLE PANEL	125.00	7,000.00	90.00	156.09	117.62	5,040.00	8,741.04	6,586.61
19	11	EACH	FARM FENCE SINGLE PANEL	80.00	880.00	75.00	106.81	85.36	825.00	1,174.91	938.98
20	128	L. FEET	8 FARM FENCE GATES - TYPE G-2	8.00	1,024.00	3.00	10.00	5.35	384.00	1,280.00	684.80
TOTAL BASE BID					$51,379.00				$26,379.64	$59,500.26	$41,317.18

BID SHEET

Item No.	Estimated Quantity	Unit	Description	Unit Price	Total Price
1.	1	LUMP SUM	MOBILIZATION	XXXXXXX	5,000
2.	1	LUMP SUM	DEBRIS REMOVAL	XXXXXXX	2,200
3.	1	LUMP SUM	SALVAGE AND REPLACE TOPSOIL	XXXXXXX	5,020
4.	40.5	KGAL	PROVIDE WATER AND WATER INJECTION	35.00	1,417.50
5.	8	EACH	CLOSE ADIT OPENINGS	200.00	1,600
6.	1	LUMP SUM	REGRADE AREA	XXXXXXX	1,030
7.	1	LUMP SUM	BACKFILL SUBSIDENCEAND/OR COLLAPSED ADIT DEPRESSIONS	XXXXXXX	1,475
8.	1	LUMP SUM	RECONSTRUCT AND STABILIZE DRAINAGE CHANNEL	XXXXXXX	200
9.	1	LUMP SUM	BACKFILL 2 BUILDING EXCAVATIONS	XXXXXXX	195
10.	1	LUMP SUM	BACKFILL AIR VENT	XXXXXXX	300
11.	1	LUMP SUM	EXCAVATION AND BACKFILL OF COAL FIRE CRACKS & SINK HOLES	XXXXXXX	1,500
12.	3	EACH	BACKFILL TEMPERATURE PROBE BOREHOLES	300.00	900
13.	1	LUMP SUM	WASTE PILE DISPOSAL	XXXXXXX	590
14.	0.17	ACRES	LIME PLACEMENT	2500	425
15.	1	LUMP SUM	PROVIDE TOPSOIL FROM BORROW AREAS	XXXXXXX	780
16.	5.35	ACRES	FERTILIZE, SEED AND HAY MULCH	2800	14,980
17.	3890	L. FEET	FARM FENCE TYPE F-4M	1.25	4,862.50

BID SHEET

Item No.	Estimated Quantity	Unit	Description	Unit Price	Total Price
18.	56	EACH	FARM FENCE DOUBLE PANEL	125	7,000
19.	11	EACH	FARM FENCE SINGLE PANEL	80	880
20.	128	L. FEET	8 FARM FENCE GATES TYPE G-2	8	1,024

TOTAL BASE BID: $51,379

FIFTY-ONE THOUSAND, THREE HUNDRED SEVENTY-NINE DOLLARS

(Price in Words)